

Pastoralists in the arid shrublands of Western Australia name the 'elephant in the room'

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Abstract

Pastoralists across five shires in the West Australian (WA) arid shrublands have designed a project to determine how to cost-effectively regenerate the productive capacity of their land. The project is focused on individual paddocks or management units to develop improved methods for controlling total grazing pressure (with an initial focus on kangaroos) and to strategically intervene in catchments to reduce the soil erosion and land dehydration processes. They acknowledge that kangaroo control is a nation-wide challenge which has a history of intractability and that it meets all the criteria of a 'wicked problem'. They also acknowledge that wicked problems require alternative problem solving methods but are disappointed that State and Commonwealth governments show disinterest in sharing the load of addressing this problem. The pastoralists are committed to contributing local knowledge for the development of necessary enabling legislation and they recognise that the multiple and conflicting interest groups must be engaged with their challenge if they are to achieve enduring solutions.

Introduction

A strategy to regenerate productive capacity

Drought and a highly variable rainfall pattern characterise the arid shrublands of the southern rangelands region of Western Australia. Traditionally, pastoralists have managed the resultant variable fodder supply by carrying a conservative number of livestock in the

belief that shrubs will provide sufficient fodder to endure dry seasons and that de-stocking will be necessary only in a drought. Unless stocking rates are very low, heavy grazing pressure in dry seasons reduces the frequency and yield of perennial grasses (and other perennial ground-cover species) resulting in reduced livestock productive capacity (Freudenberger *et al.* 1999). Accelerated soil erosion and land dehydration is an additional consequence (Ludwig *et al.* 2005).

A three-year benchmarking study with fifty pastoral businesses in the Southern Rangelands revealed that stock numbers relative to rainfall increased 50% and then 100%, in two successive dry years following a run of good seasons. Pastoralists recognise that the inability to control transient populations of neighbouring kangaroos (Norbury *et al.* 1993) may explain why stock numbers are not effectively adjusted downwards in dry seasons. Since the 1930s, the productive capacity of the region has declined markedly (McKeon *et al.* 2004) and its regeneration may depend upon effective control of kangaroo grazing pressure.

Pastoralists across five shires in the Southern Rangelands of WA have identified a range of processes responsible for their lost productive capacity and collectively they have determined that creating a viable future will require a reversal of these degrading processes. A series of producer-initiated workshops over fourteen months led to conclusions that a two-pronged strategy was needed to rebuild the viability of their industry:

1. Access additional funds to improve control of wild dog predation.
2. Re-build the productive capacity of the lands by:
 - a) '*Managing the raindrop*' to minimise sheet and gully erosion and improve rainfall infiltration rates; and
 - b) Improving methods to control total grazing pressure to enable perennial ground-cover species to regenerate (with an initial focus on kangaroos).

An incorporated body has recently been formed to deal with both biosecurity and production issues affecting the regional pastoral industry. The author worked with the board of management to write submissions to State and Commonwealth bodies seeking funds to assist in re-building the productive capacity of the land. This process brought strong industry leadership to the fore and galvanised pastoralists' resolve to address the

multiple and complex issues. The submissions were written with an acceptance that the problems being addressed are intractable and meet the eight criteria defining 'wicked problems' (Australian Public Service Commission 2007). Thus alternatives to traditional R, D & E methodologies would be needed (Ison and Russell 2000). These alternative approaches were built around aspects of Participatory Action Research to involve producers with research (Carberry 2001); social Learning to ensure that the multiple and conflicting interest groups were engaged (Ison *et al* 2007); and local knowledge contributing to more enabling government policy (Nelson *et al* 2008).

Three research sites have been identified where participating pastoralists have paddocks suitable for electric fence upgrades to improve control of goats and kangaroos. Other interested pastoralists in the district will be active participants in the design and implementation of the activities at each research site. Kangaroos will be shot to predetermined numbers, abiding by the WA regulations for kangaroos. Prototype selective entry devices will be installed on trap yards around trough waters to divert kangaroos towards the natural waters. Targeted objectives will be set for improving livestock productivity, rangeland condition and gross margins for each paddock, with monitoring methods designed to record key performance indicators for achieving these objectives. Small exclosures around shrub mounds near monitoring sites will be used to study the relationships between rainfall and grazing pressure on the regeneration dynamics of pasture species. With the failure of two funding submissions, the group is now negotiating to achieve similar objectives through the National Drought Pilot being conducted in WA.

A tragedy of the commons?

Where goats and kangaroos are not under control, the nub of the wicked problem is that when a producer carries conservative numbers of livestock and adjusts numbers to stay within the seasonal carrying capacity, neighbouring kangaroos (and goats) invariably move in to take advantage of the superior fodder (Norbury *et al.*1993).

Managing total grazing pressure in low carrying capacity rangelands demands well developed skills in:

- Assessing feed-on-offer (FOO);
- Determining safe utilisation levels for different functional groups of plants;

- Using monthly rainfall probabilities to inform stocking rate decisions;
- Assessing livestock body condition scores to manage towards achieving livestock productivity targets;
- Financial management; and
- Livestock marketing.

Assessment of FOO in shrublands is complicated by the difficulty of determining the available fodder from shrubs. This can be partly overcome by recognising that the inter-shrub perennials, including the grasses, can be significant drivers of productivity and sustainability (Freudenberger *et al.* 1999, Brennan *et al.* 2006). On low carrying capacity shrublands, assessment of FOO starts initially as an approximation. Body condition scores are used to calibrate and fine tune assessments of FOO over time.

Without sound marketing skills, de-stocking decisions in dry seasons can often be postponed resulting in over-grazing and lost livestock production. A commercial training program is available to help producers overcome the perceived barriers to effective livestock marketing in variable seasons (KLR Marketing 2010). Despite the problem of kangaroos moving to superior fodder, pastoralists using the full suite of management tools attempt to continually balance livestock and pasture objectives to achieve business and land management goals. They report dramatic reductions in their stress levels during dry seasons. Nonetheless, seeing kangaroos arriving in numbers to graze regenerating perennial grasses down to ground level is a disheartening experience (e.g. M. Clinch *pers comm*). Consequently, numbers of pastoralists have decided that uncontrolled kangaroo grazing can no longer be accepted.

Where wild dogs are endemic, careful management of the whole ecosystem can result in effective goat and kangaroo control (K. Shaw *pers comm*). Livestock guarding dogs are reported to control wild dogs and kangaroos in some situations (N. Stuart-Moore *pers comm*) which may provide a solution for sheep and goat producers.

Conclusion

The social, economic and environmental future of the arid shrublands of WA is threatened by the lack of effective control of kangaroo grazing pressure. Given that the problem is not unique to this region, the Australian Rangelands Society could play a pivotal role in bringing together the necessary forces to coordinate a focused campaign to address this wicked problem.

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