Collaborative Area Management

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Abstract

The main agricultural industry in South West Queensland is rangeland grazing. Historically, this has encompassed wool production, however, a decline in the sheep industry and an increase in the cattle industry is now evident, due in part to an increase in wild dog predation and low commodity returns for wool products.

With a strong correlation between the decline of the sheep industry and economic sustainability of rural communities in South West Qld, measures that develop sheep industry resilience and profitability have become a major focus of South West NRM along with industry groups.

Collaborative Area Management (CAM) is a South West NRM initiative originally funded by our company as a 'proof-of–model' and expanded under support by the Qld State government funded innovation grant.

The CAM projects are monitored in a holistic fashion for improved pasture condition and a decrease in weed and pest species and these will be related to farm stock data and improved grazing business and community economic parameters.

Introduction

Historically, South West Queensland and specifically the Mulga lands bioregion was identified as one of the leading sheep and wool production areas in the State. For the period 1985 to 1988 this region represented 25% of Queensland's sheep population, with wool production in the area accounting for approximately 25% of the State's total output (Queensland Government, 1990). Today however, as a result of severe external grazing pressure and introduced predators, the region, like many other parts of Australia has largely changed to cattle grazing as a means of sustaining an agricultural industry (Fig.1.) (Fig.2.)

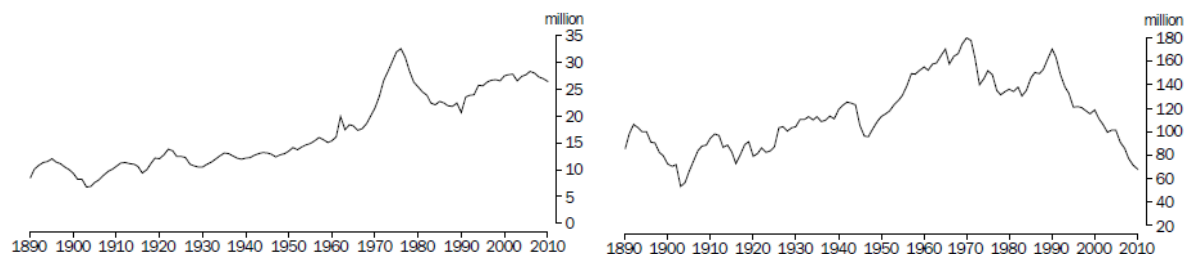Cattle (milk and meat)   Sheep and lambs

Fig.1. Comparison between total cattle numbers in Australia from 1890-2010 and sheep and lamb numbers for the same period (Australian Bureau of Statistics 2010)

Intense grazing pressure and predation by wild dogs are affecting landholders and also biodiversity in South West Queensland. Unmanaged total grazing pressure (TGP) can have a negative impact on ground cover, soil erosion, weed invasion and fouled water supplies. This impacts small native animals that use ground cover as refuge from predation and may ultimately affect the biodiversity

values within an area (Fisher *et al* 2004). Collaborative baiting efforts to control feral pigs, fox, cat and wild dog populations are leading to the return of vulnerable native species in one cluster in the Morven area and this trend is expected to continue across all clusters for the life of the project.
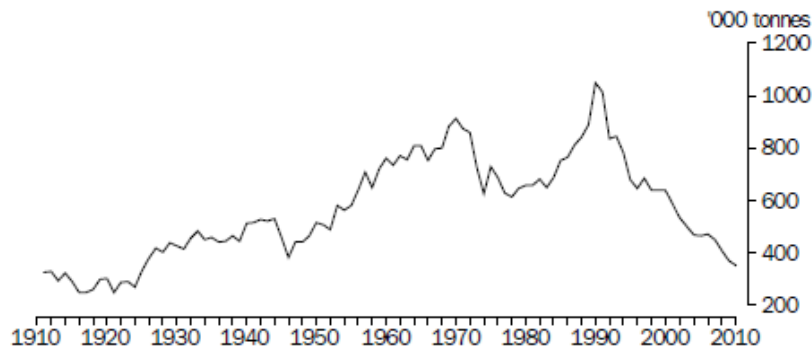
Wool production

Fig.2. Total wool production to 1973 and then total shorn wool production from 1974 onwards in Australia (Australian Bureau of Statistics 2010)

Collaborative Area Management exclusion fencing offers landholders the chance to control TGP, reduce predation on livestock and increase biodiversity on their properties. It is hoped that exclusion fencing together with appropriate pest animal management will allow landholders the opportunity to return to the sheep industry. The multiplier effect on local employment will then further support the regional community.

Funding, fencing and collaboration

A funding amount of $3.825 million was invested by the Queensland state government into the CAM project to be managed by SWNRM. This funding has been distributed to six cluster areas of between approximately 150,000 and 300,000 ha.

The exclusion fence standard used in this project is defined as a netting type fence approximately 1.5 metres in height and utilises a 30-cm apron at the bottom to prevent digging by animals. Construction of the fence is undertaken by the respective landholders in each CAM cluster and the fence can, on average, be erected at a rate of 1 km per person per day.

Collaboration between landholders within a cluster is vital for the timely erection of the fence and the overall success of the project. Once construction has been completed, populations of wild dogs and other pests contained within the project area will need to be reduced.

Total grazing pressure

Total grazing pressure consists of pressure applied by domestic livestock combined with that applied by wild stock, including native macropods and feral species such as wild goats and pigs. Animals such as wild goats and kangaroos are able to maintain large populations across pastoral lands where artificial water points are readily available and are thought to contribute approximately 50% increase in grazing intensity (Fisher *et al* 2004 &Waters *et al* 2012).

Managing grazing pressure from feral and native animals is generally more difficult than for domestic stock due to the size and extent of wild stock populations, the mobility of some species, the expense of ongoing control activities and the lack of directly obvious economic and ecological benefits (Fisher *et al* 2004). Exclusion fencing is one possible way to manage TGP applied by wild stock across pastoral lands.

Wild dogs

Wilds dogs are declared pests and have been regulated under Queensland legislation since 1885 (Perkins 2013). Wild dogs are a problem for the sheep and cattle industries; the creation of artificial water points across a grazing landscape can facilitate an increase in predation by increasing the range and size of predator populations (Fleming *et al* 2012). Wild dogs also have a negative impact on native animals (Table 1) and an increase in wild dog numbers puts pressure on vulnerable wildlife (PestSmart 2011).

Table 1. Currently listed native species threatened by wild dog predation.

This species list includes those native animals that are potentially or known to be threatened by predation by wild dogs. These species are all listed under the national Environment Protection and Biodiversity Conservation Act 1999.*

Species type	Common name	Scientific name	Adult weight (kg)
Mammal	marsupial moles	*Notorycetes typhlops, N. caurinus*	0.07
Mammal	smoky mouse	*Pseudomys fumeus*	0.09
Bird	Black breasted button quail	*Turnix melanogaster*	0.1
Mammal	golden bandicoot	*Isoodon auratus*	0.7
Mammal	northern quoll	*Dasyurus hallucatus*	1.2
Mammal	greater bilby	*Macrotis lagotis*	2.5
Mammal	long-footed potoroo	*Potorous longipes*	2.5
Bird	malleefowl	*Leipoa ocellata*	2.5
Mammal	bridled nailtail wallaby	*Onychogalea fraenata*	8
Mammal	proserpine rock-wallaby	*Petrogale persephone*	8.8
Mammal	koala	*Phascolarctos cinereus*	12
Mammal	northern hairy nosed wombat	*Lasiorhinus krefftii*	31
Bird	southern cassowary	*Casuarius johnsonii*	60
Reptile	marine turtles	various	-

*Table adapted from information retrieved from PestSmart 2011 factsheet

The four most commonly used techniques to control wild dog populations are baiting, trapping, shooting and exclusion fencing (Fleming *et al* 2001). Each of these methods has advantages and disadvantages and while this project utilises each method where appropriate, exclusion fencing is the key approach to reducing TGP and predation. Fencing is time consuming and expensive to construct however it has been shown to be effective in preventing the movement of wild dogs into an area in which they have previously been controlled; exclusion fencing is a non-lethal alternative for wild dog control (Queensland Government 2011). A key indicator of the success of the collaborative area management project is a reduction in the number of wild dogs within the cluster areas of South West Queensland.

Monitoring and evaluation

It is important to monitor changes within the clusters to assess the impact of the exclusion fence and to evaluate the overall success of the project. Pasture condition is being monitored to determine changes in TGP. Biodiversity counts are being undertaken by utilising a passive tracking index and distance sampling. A passive tracking index is used to obtain an index of abundance for wild dog, macropod, cat and fox numbers as well as other pests and native wildlife. Distance sampling (spotlighting) is used to obtain density estimates; this method is not appropriate for the monitoring of wild dogs however it is useful for macropods, cats, foxes and rabbits.

Economic data are obtained through profit and loss statements from landholders and a general report from landholders to monitor stocking rates. Social data assessing the wider impact of exclusion fencing will look at enrolment numbers in local schools, the number of people in local hospitals and the number of people employed in the agricultural industry in the area.

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