

# The Last 50 Years of Pastoralism: What Impact Drought Strategies?

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## The Last 50 Years

As at 30 June 2016, there were 25 million head of cattle and 70.9 million sheep in Australia (ABS, 2016), i.e. around 34 million adult equivalents. The data for 2019 are not yet available, but all indications are that there will be a further reduction after this current widespread drought. It seems each ensuing drought takes a toll, and while stock numbers are the statistic which attracts most attention, it is deterioration of the rangelands which should cause most concern. The cumulative effects of each drought episode are analogous to a boxer's attempts to survive as more blows are landed. In our lifetime, the national numbers have tumbled from 33 million head of cattle and 180 million sheep in the 1970s (around 55 million adult equivalents) to current levels. The question which needs to be asked is: "Could we ever sustain these stock numbers again in Australia?"

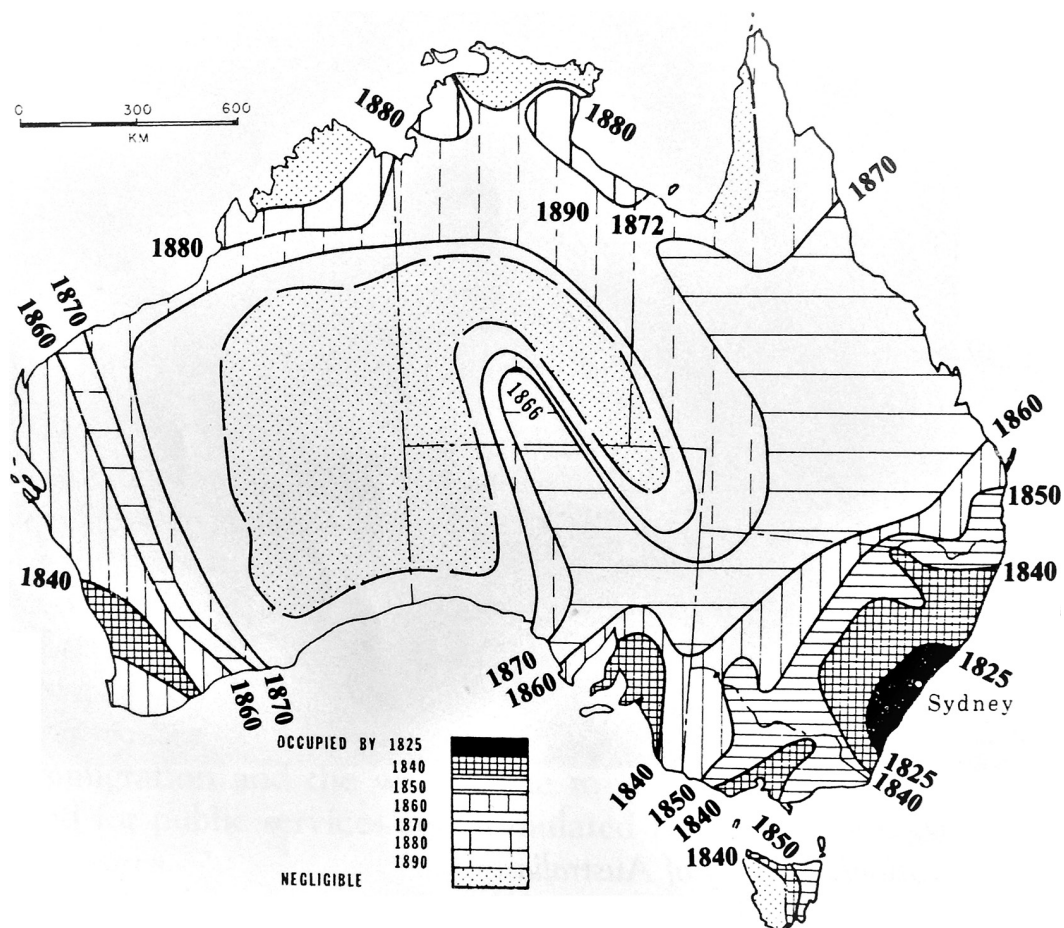
## Evolution of a Pastoral Industry

An historical examination of the grazing industries (Williams, 1982) provides insight into how we have arrived at this point (Figure 1).

From its meagre beginnings of a bull, bull calf and four cows in 1788, the Australian beef herd evolved slowly over the next 50 years and was restricted to the major regions of settlement in New South Wales, Victoria, Western

Australia and South Australia. However, with the cessation of transportation of convicts in the mid-1800s and expeditions by early explorers such as Sturt, Mitchell, Stuart, Leichardt, Forest and Kennedy, pastoralism exploded in the next 40 years, and by 1890 most of the grazing lands in Australia had been opened up (Figure 1). By 1862, both New South Wales and Victoria were grazing about six million sheep each, with Queensland only a little behind. Between 1860 and 1894, the whole sheep population had risen from 20 million to 100 million, and the cattle from four million to more than 12 million. The great drought from 1895 to 1902 reduced the sheep population by half, and much of the western districts of New South Wales were virtually destocked (Williams, 1982). In 1901 with the federation of the states and the emergence of a new nation, sheep numbers again accelerated as wool production was much more amenable to the development of a thriving grazing industry and success was not dependent on processing plants, refrigeration, inland roads or domestic markets. The national flock peaked at 180 million head in 1970, but declining global demand, rising costs of labour, deteriorating land condition and increasing predation have seen a marked decline in both the size of today's sheep population (70.9 million) and the regions now suited to sustainable sheep production.

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**Figure 1.** Stages in land settlement (Williams, 1982).

Meanwhile, the metamorphosis that occurred in the beef industry has been equally interesting. As refrigeration and shipping improved, export markets were developed and stock routes sprang up through the north, creating corridors through which the beef industry could effectively operate. Beef production gradually replaced wool in the northern regions less suited to sheep, and the national herd grew slowly to around 16 million head by 1960. Vast breeder operations were established in the dry tropical zones, and these supplied store steers into the fattening regions of the channel country which were located closer to processing facilities on the eastern seaboard. Great Britain was the

main importer until its entry into the European Common Market in the mid-1950s. This necessitated the development of new markets in the United States and Japan, which created demand and stimulated a rapid expansion in cattle numbers between 1960 and the infamous 1974 beef slump when the national herd reached its peak of 33 million head. Beef roads were developed and the stock routes gradually disappeared, though they were still significant in Queensland as a key resource. The eradication of both tuberculosis and brucellosis, along with the change in genotype, meant that northern Australian cattle were highly adapted to the environment and suited to the live export trade in South East Asia.

Advances in pump technology, polyethylene pipe, supplementation, a botulism vaccine, road trains and weaning improved the ability to manage droughts and reduce stock losses – but at what cost? Management strategies developed with the intention of averting major stock losses from drought by more efficiently utilising available pasture reserves; this meant existing stubble could be grazed to ground level. Government policies on fodder and freight rebates were designed with every good intention to keep stock alive and ensure business survival, but at the expense of long-term sustainability because each widespread drought would progressively remove more perennial pastures. It was thought that massive stock losses (25,000 head), as occurred in the 1958 drought on Brunette Downs (Henty 1963), could now be avoided.

### What Has Changed Since the Sixties?

The factors leading to the apparent loss of carrying capacity in the rangelands are multi-factorial but include:

1. An increase in the capital value of the land in comparison to the value of the stock means less funds directed at working capital and more into financing an asset that is losing productivity.
2. Development and the continued utilisation of new country reduce the reserves available in years of widespread drought when feed is scarce.
3. Supplementation, efficient transportation of fodder and development of underground water supplies have enabled stock to be retained on pastures far beyond their capacity to regenerate.
4. A change from *Bos taurus* to *Bos indicus* breeds, along with their hybrids, in the dry tropics has allowed better survival rates in drought but perhaps to the longer-term detriment of the pasture ecosystems on which they graze.
5. Stock can be transferred farther afield –

placing more grazing pressure on pastures in other regions previously not under threat.

6. Major stock losses have been avoided but at the cost of reduced opportunity for subsequent pasture regeneration. It takes literally years in arid regions for pastures to recover (Figure 2).
7. Intensification of water use, including increased numbers of borehole pumps and the loss of water from open bore drains, has lowered water tables and caused natural streams to stop flowing sooner.

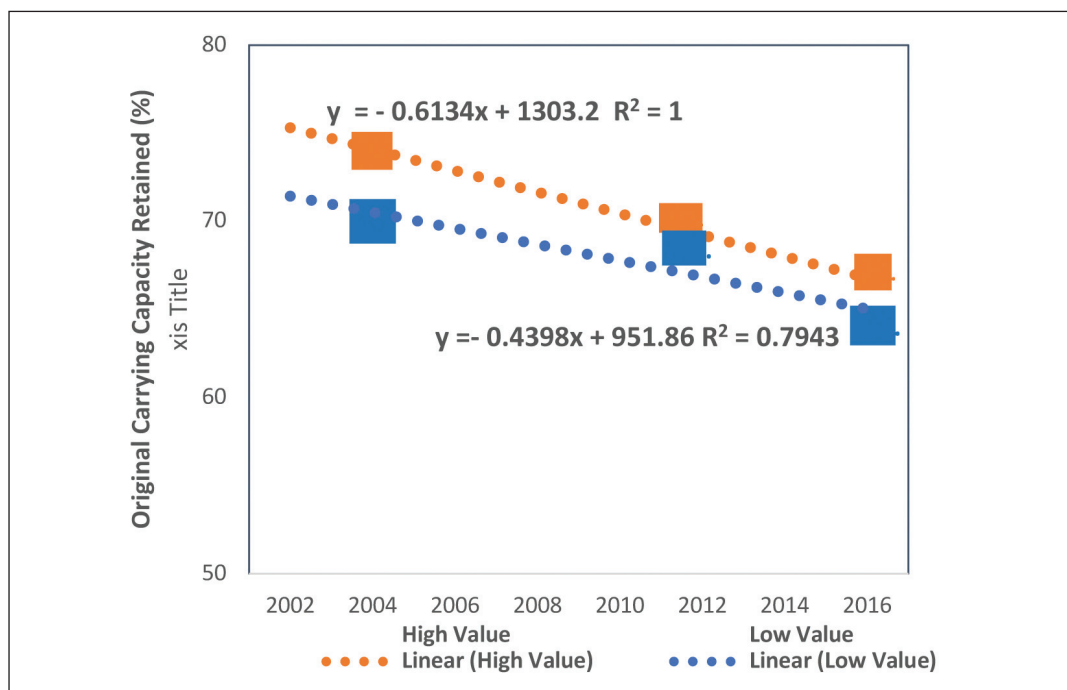
### A Change in Focus Is Needed

The development of lot feeding and live exports now ensures that markets exist for store steers which would have been retained previously in widespread drought. This should have improved our ability to manipulate stocking rates, provision for spelling country, manage drought periods and stabilise the nation's carrying capacity. Notwithstanding, there are examples of pastoral businesses successfully operating in arguably the most variable rainfall regions in Australia where drought is commonplace. One such region lies south of Alice Springs, extending into northern South Australia. The rainfall gradient ranges from a 256 mm long-term average at Alice Springs to 171 mm at Kulgera on the South Australian border. Further, the rainfall is truly non-seasonal in this region, where any amount may fall at any time. Droughts are a common feature. A 12-year study in this region (Holmes, 2014) showed that the businesses with the lowest stocking rates generated higher whole-business profits. The study period included a six-year drought, and it was also found that the drought recovery period was significantly shorter in those businesses with the lowest stocking rates. The reason for this is that the herd inventory remained more stable and returned to full production capacity sooner. The relationship between profit and pasture availability was strong.

**Figure 2.** Pasture regeneration at an enclosed monitoring site (Goldfields, WA) after 25 years.



**Figure 3.** Change in proportion of original carrying capacity retained at the 3 assessment times for high grazing-value land types (grazing value >5) and low-value land types (grazing value ≤5) (Shaw et al., 2016).





Prudent management of grazing pressure is fundamental to maintaining land condition. A series of surveys across the northern Gulf region (Shaw, 2016) suggests that carrying capacity has declined over recent decades from 72% to 66% (Figure 3) with deteriorating land condition. If the trend continues, 50% of original carrying capacity could be lost by 2046 in this region.

The focus needs to turn from management of livestock to management of pastures. When the health of the pastures is centre stage in management and drought planning, sustainability of

rangeland enterprises can be achieved. It's not the ability to predict the seasons that is paramount but the necessity to understand pasture growth curves, adjust stocking rates according to pasture availability, develop long-term carrying capacities, implement suitable spelling practices and make early decisions based on well-established critical trigger points before livestock become unsaleable. The golden rule for sustainable pastures as advocated by Bill Burrows is still relevant: "Ensure you come out of a drought with stubble on the ground."



No stubble coming out of drought – no recovery of pastures.

### Conclusion

It would appear that despite advances in transport, feed options and livestock management, grazing strategies used in European systems cannot be successfully applied to the highly variable rainfall environment that exists in arguably the driest continent on earth. Drought is not a novel phenomenon, but the impact of successive droughts, the lack of resilience and the apparent loss of land condition present new challenges that need to be addressed by the pastoral industries in the 21st century.

Examples exist which demonstrate how this can be achieved. It is paramount therefore that custodians and managers of the rangelands develop sound drought management plans that focus primarily on preserving native pastures and land condition – similar to biosecurity requirements. Assistance packages and drought relief should embrace measures that demonstrate prior planning and ‘best practice’ grazing management.

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