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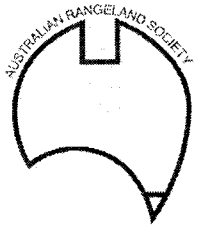

The Australian Rangeland Society

RESOURCE MONITORING CAPABILITY IN THE DESERT UPLANDS OF CENTRAL QUEENSLAND

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ABSTRACT

In 2004, a national pilot study was conducted under the direction of the Australian Collaborative Rangeland Information System (ACRIS). In Queensland the test region was the Desert Uplands Bioregion of the central inland. Five questions were posed dealing with changes since the early 1990s in forage resources, land condition and the local community's capacity to respond. The main findings of the report compiled by Gary Bastin are re-iterated and learnings for future resource monitoring and reporting activities are discussed. Queensland's ability to monitor via remote sensing is very good. There are documented monitoring protocols such as T.R.A.P.S., GrassCheck and QGraze, plus allied databases. A shift in the nature of structured, on-ground resource monitoring was evident during the time, including the formation of new groups like the Desert Uplands Build-up and Development Strategy Committee. However continuity of some on-ground verification programmes has become quite tenuous over the past eight years.

THE ACRIS CONCEPT

The Australian Collaborative Rangeland Information System (ACRIS) collates rangeland information from State, Northern Territory and Australian Government agencies and other sources. It has recently been included within the National Land and Water Resources Audit framework. After setting objectives and choosing appropriate outputs (ACRIS 2001), a test of the system's capability was done for a region in each rangeland State. The approximate timeframe covered was the decade 1992 to 2002. Each region attempted to report against 5 themes. Details are reported on the ACRIS website www.deh.gov.au/land/management/rangelands/acris/.

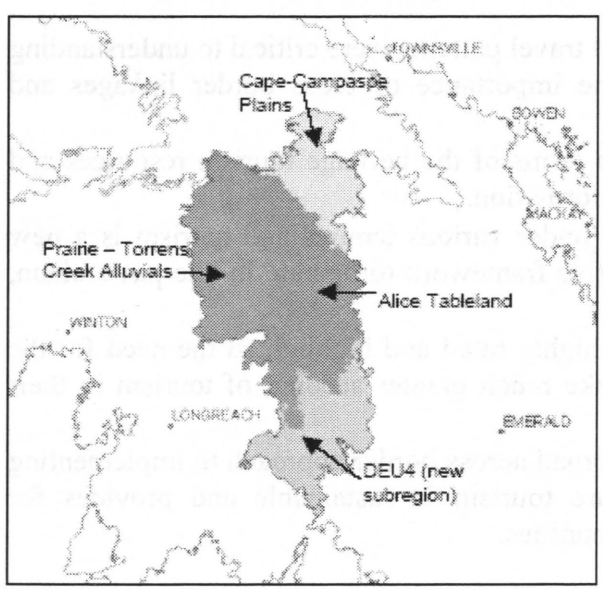

Figure 1: Location of the Desert Uplands Bioregion (68,853 sq km) within central Queensland
(The 4 sub-IBRAs are also shown - DEU4 is now called Jericho)

The Desert Uplands Bioregion (Figure 1) was chosen for Queensland because it had a number of activities underway that related to resource monitoring. Nonetheless, some themes were not able to be reported upon well. Results were couched in the context of seasonal rainfall received during the test period (Figure 2).

THE RESULTS

Change in potential forage growth

Reasonable rain fell in the late 1980s and in 1990 but then a prolonged very dry period ensued (Figure 2). Then followed some above-average years but conditions again deteriorated to drought in 2002-03. Modelled output from Aussie-GRASS (Carter *et al.* 2000) shows the lag between any big change in growth due to rainfall and the resultant standing pasture available (Figure 2). Mean annual rainfall averages about 500mm but ranges from 600 to 350mm. More details about physical resources of the region can be found at the following website – www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/desert_uplands/

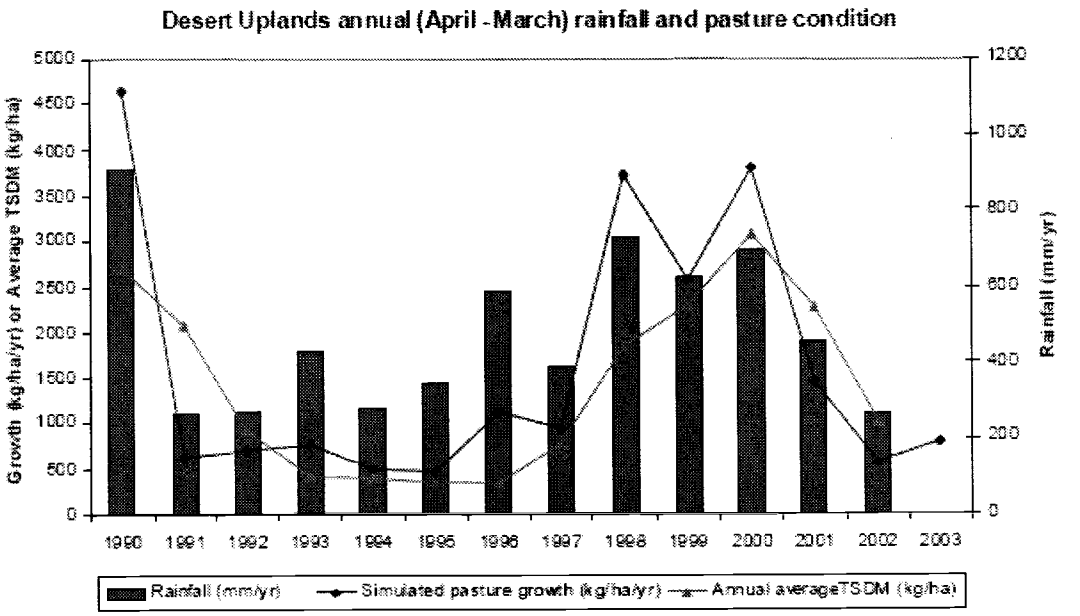

Figure 2: Fluctuations in simulated annual pasture growth, expected total standing dry matter at the end of summer and annual rainfall for the bioregion as a whole

On ground monitoring

Pastoral monitoring activity was found to be fairly scant and determined by particular project activity rather than structured, ongoing programmes. QGraze (DPI&F 2005) was very active at the start of the decade but by early 2000 only monitoring linked to the Desert Uplands Build-up Strategy was continuing at many sites. Improved pasture composition was only recorded in average to above average seasons. Of sites recorded in above average seasons, 11% showed a decline in 3P (palatable, perennial, productive) grasses (Bastin *et al.* 2005). Monitoring by Dept. Natural Resources & Mines (DNRM) showed no pasture improvement in the early 2000s as seasonal conditions declined (Figure 3).

Bare ground

Bare ground sensing from satellite is becoming a possible broad-scale monitoring tool but the technology was not proven when the assessment was made. On-ground monitoring of ground cover change via the DNRM programme showed marked fluctuations over 5 years (Figure 4).

Tree cover

Appreciable tree clearing has occurred in the Desert Uplands and satellite data from the SLATS (Statewide Landcover & Trees Study) showed this particularly in the southern parts between 1997 and 1999 (Wilson *et al.* 2002).

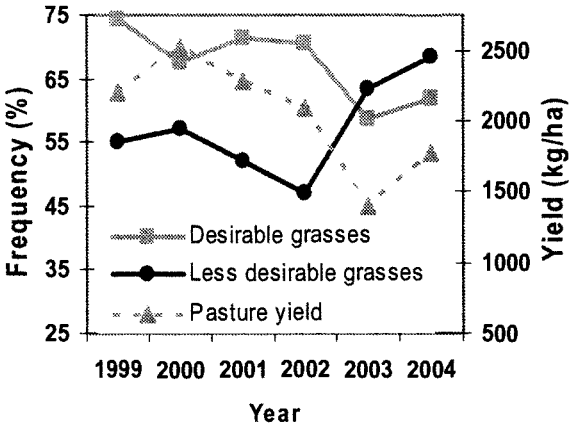

Figure 3: Change in average pasture composition and yield over all Desert Uplands pasture monitoring sites recorded between 1999 – 2004 (Mean rainfall for 2004 was 455mm)

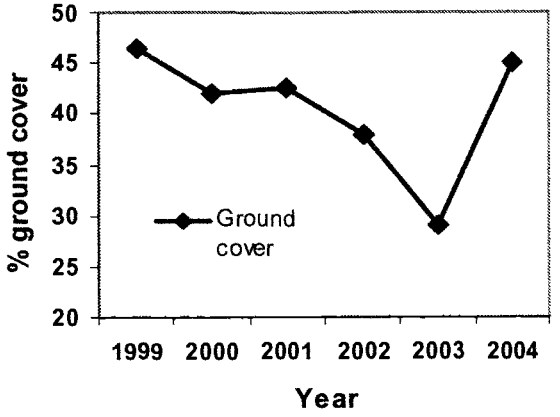

Figure 4: Mean ground cover percentage over 5 years from the monitored sites

However, information over a longer timeframe provided by the Australian Greenhouse Office shows that there have been cycles of tree regrowth and clearing since the 1970s (Figure 5). Careful attention should be paid to what each method records as they differ.

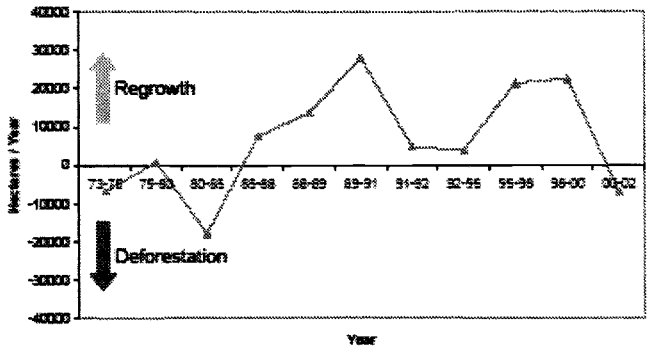

Figure 5: Average yearly net change in 'forest' cover in the Desert Uplands bioregion over a sequence of reporting periods from 1973

Biodiversity

There was no co-ordinated information available for this region for the study period but Morgan *et al.* (2002) provided an anecdotal summary that said "Most of the Desert Uplands bioregion remains in a relatively natural condition and its biodiversity, including both plants and animals, is largely intact. Less than 12 percent of the bioregion has been subject to tree clearing, and introduced weed species are not yet widespread. ...Twenty-nine plant species and 22 animals found in the bioregion are listed as rare or threatened under the *Nature Conservation Act 1992*."

Social indicators

The Aust. Bureau of Statistics provided socio-economic indicators that they considered useful for informing rangeland policy. They used data from the Census of Population and Housing (1991, 1996 and 2001) and the Agricultural Census 2000-01, and the Australian Agricultural and Grazing Industry Survey conducted by the Australian Bureau of Agriculture & Resource Economics (ABARE). These show an ageing, declining population earning modest income primarily from cattle (Table 1). Some fencing to protect valued country was occurring, probably fostered by local community drive.

Desert Uplands Build-up & Development Strategy

The Desert Uplands Build-Up & Development Strategy has an active committee with a secretariat driving local communities to adopt sustainable use and development of their area. It has a website (www.desertuplands.org.au) informing people about upcoming events and

continuing projects to help them achieve their goals. There is a detailed map and description of the biophysical resources of the region on their internet site to help boost regional capacity to meet challenges. See http://www.desertuplands.org.au/duslrad/welcome.html

Table 1: Excerpts from the Australian Bureau of Statistics section of the Regional Report, derived from official ABS surveys and censuses that included the bioregion

Indicator type	Desert Uplands information
Median age of primary producers	1991 – 44yrs 1996 – 47 yrs 2002 – 47 yrs
Total family property income	1996 to 1999 $83,142 1999 to 2002 $75,789
Regional population	1991 ~ 3900 2001 - 3737
% population identifying as Indigenous	2001, 5% compared to Qld 3%, Aust. 2%
Address change	2001, 74% at same address as 5 yrs earlier compared to Aust. mean of 49%
Agricultural production	Cattle & calves worth $221m Cattle & calves provide 85% of agric. production, wool 10%, crops 2%
Area fenced to protect from grazing	88,700 ha (43% of this to 'protect all other areas')

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