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National Land & Water Resources Audit

Extract from Rangelands 2008 — Taking the Pulse
Key issues and findings

Assistant Secretary
Biodiversity Conservation Branch
Department of the Environment, Water, Heritage and the Arts
GPO Box 787
Canberra ACT 2601
Australia

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Key issues and findings

Climate variability and management influences

'*Seasonal quality*' describes the relative value of recent rainfall for vegetation growth and is used to help distinguish the impacts of climate variability from those of grazing management and fire. The term is italicised throughout this report to emphasise its use for indicating the effects of recent climate.

→ Findings

Seasonal quality between the early 1990s and 2005 was generally above average in the north and northwest, variable in much of central Australia, initially above average in most of the Western Australia (WA) and South Australia(SA) shrublands followed by drier-than-average conditions, and below average followed by drought conditions in the eastern grasslands and mulga lands.

→ Management implications

Pastoralists and other land managers are likely to face increased rainfall intensity and cyclone incidence across the north, and decreased rainfall and changing seasonal patterns across southern and southeastern regions. Increased atmospheric carbon dioxide may enhance photosynthesis, partly offsetting the expected reduction in plant growth in areas of decreased rainfall.

Landscape function and grazing pressure

'Landscape function' — a measure of the landscape's capacity to capture rainfall and nutrients — provides an assessment of landscape condition and resilience, including cover of perennial plants.

'Critical stock forage', which can be reported using a subset of the data used for landscape function, comprises perennial forage species known to decrease with excessive grazing (typically, palatable perennial grasses in the north and centre, and palatable chenopod shrubs in the south).

Grazing by livestock (cattle and sheep), feral herbivores (goats, donkeys, horses, camels) and kangaroos affects landscape function and critical stock forage, particularly when total grazing pressure remains high in years of lower *seasonal quality*.

→ Findings

Results are based on monitoring programs that provide information about pastoral land management, not ecological sustainability.

Data from the majority of monitoring sites in 26 bioregions in WA, SA, New South Wales (NSW) and the NT suggest an increase or stability in landscape function, given the trends in *seasonal quality* and known stocking densities from 1992 to 2005. Baseline condition is unknown and a 'no change' (stable) result may not be favourable for sites in degraded landscapes (ie increased landscape function is a more desirable outcome in such cases). Reported change applies to the local area of monitoring sites, not the whole of each bioregion.

In Queensland, five bioregions showed seasonally adjusted stability or increase in landscape function from road-traverse data. Six bioregions had decreased landscape function.

Critical stock forage has remained stable or improved at the majority of sites in 28 bioregions with suitable data for reporting, despite periods of low *seasonal quality* and variable stocking density. As for landscape function, baseline condition is unknown and stability may be an unfavourable result for sites in degraded landscapes.

In some pastorally important bioregions, recent stocking density has remained high as *seasonal quality* has deteriorated.

Kangaroos contribute between 20% and 40% of the livestock grazing pressure in the southern and eastern rangelands. There is considerable year-to-year variation in the contribution of kangaroos to total grazing pressure relative to livestock. Feral herbivores also contribute significantly to total grazing pressure in some areas. Their distributions across the rangelands are known reasonably well, but reliable data on regional densities are generally lacking.

→ Management implications

Without adequate knowledge of baseline condition and more extensive monitoring data, it is difficult to assess the impact of recent grazing management practices. While there is a view that management practices are benign, that assessment could be

overoptimistic, particularly where 'no change' has occurred at sites in poor condition.

In some northern bioregions (eg the Pilbara), the buoyant live-shipper market into Southeast Asia has resulted in a considerable increase in cattle numbers during generally good seasons. In other areas, intensification through lease subdivision, development of grazing infrastructure and improved fire management have accompanied this expansion in cattle numbers (notably in the Sturt Plateau bioregion).

Future improvement (where possible) in landscape function and critical stock forage requires that pastoralists continue to make timely adjustments to total grazing pressure in line with variable *seasonal quality*. This imperative is increased with higher stocking densities under intensified production. The continued timely delivery of information to pastoralists and land management agencies about trends in landscape function and critical stock forage should assist appropriate future land management practices.

Biodiversity

Biodiversity is the variability among living organisms from all sources, and includes diversity within species and between species and diversity of ecosystems. Land clearing, wildfire and grazing have affected biodiversity in parts of the rangelands, but our ability to report change in biodiversity is limited due to inadequate data.

→ Findings

Historically, there have been substantial declines in rangeland biodiversity, and there is no reason to believe that they have ceased, given current land uses and time lags in biological responses. This assumption is backed by documented declines in the detection rates of some bird species in the rangelands by the Birds Australia volunteer network.

The Collaborative Australian Protected Areas Database (1997–2004) (CAPAD) documents significant changes in management intent for some areas, most notably in the Great Victoria Desert and Central Ranges bioregions of central Australia where Indigenous communities have agreed to manage very large areas of their land for biodiversity conservation.

The extent of woody cover has significantly decreased due to broadscale clearing in a limited number of bioregions on the eastern margin of the rangelands (Queensland and NSW). Case studies show that loss and fragmentation of habitats have affected several rangeland species.

In many pastorally productive regions, increased numbers of waterpoints have reduced the area of land remote from water. In some instances, water-remote areas can make a de facto contribution to biodiversity conservation, as lower total grazing pressures in those areas may provide refugia for biodiversity.

→ Management implications

The New Atlas of Australian Birds (Barrett et al 2003) provided valuable insights into change for approximately 60 bird species, but there were limitations in the more remote parts of the rangelands due to scarce data and high seasonal variability.

CAPAD allowed reporting of change in the extent of Indigenous protected areas, private protected areas and the National Reserve System. However, absence of data on the effectiveness of management (for instance, in weed and feral animal control) prevents quantification of improvements in biodiversity outcomes. A key challenge is to establish the capacity to manage those areas effectively for biodiversity conservation.

The most pastorally productive bioregions remain the most poorly represented within the National Reserve System.

Areas remote from water in pastoral country can contribute to biodiversity conservation, but their value diminishes where they occur as isolated patches and where weeds, feral animals and fire are inappropriately managed.

Fire regimes

High fire frequency and intensity, and large-scale fires, can damage rangelands, as can the absence of fire where it was once part of the ecosystem. A national system for reporting the extent and frequency of fire is in place and can now track changes in fire regimes.

→ Findings

Across northern Australia, up to 40% of some tropical savanna bioregions burn each year. Altered fire regimes are having significant impacts on components of the native flora and fauna.

→ Management implications

In areas such as the Sturt Plateau bioregion, communities are working with government to manage fire for improved production and conservation outcomes. Elsewhere, there are programs to re-establish Indigenous burning practices (eg the West Arnhem Land Fire Abatement Project).

In the semiarid eucalypt and acacia woodlands in the eastern rangelands and in the northern tropical savannas, reduced fire frequency affects the management of woody thickening, a significant issue for the pastoral industry in some regions.

Weeds

Weeds affect both production values and biodiversity conservation. Eleven plant species have been identified as 'transformer weeds' that permanently alter ecosystems and habitats. The transformer weeds include rubber vine, prickly acacia and four exotic grasses.

→ Findings

Despite an improved ability to map the distribution and abundance of some significant weeds, such data are absent or inadequate for many others.

→ Management implications

Inadequate data on changes in the distribution and abundance of important weed species make it difficult to quantify those species' effects on production and biodiversity conservation at a bioregion scale.

Some transformer weeds, such as buffel grass, can also provide an important economic resource to the pastoral industry. Addressing the lack of agreed protocols for the use of such species, and minimising their impacts on biodiversity values, remain significant challenges.

Land values

Socioeconomic data for the rangelands are difficult to extract from national statistical datasets, but changes in pastoral land values (which may reflect relative profitability, asset-to-income ratios and ability to service debt) have been reported. There are problems in comparing values derived by differing means in each jurisdiction, but these indicators reveal important long-term trends in the social and economic viability of pastoral land.

→ Findings

Land values have increased in the order of 150%–300% for many bioregions over part or all of the reporting period.

→ Management implications

Generally, increases in land values were far more than could be accounted for by increases in productivity (turn-off of meat and/or fibre). Increasing cattle prices during parts of the 1992–2005 period may have contributed to increased financial productivity over and above any gains in agricultural productivity, but this was not the case for the wool industry.

For established rangeland pastoral enterprises, the increase represents a substantial boost in asset wealth. However, those who have recently bought rangeland properties may be under greater pressure to maintain a return on equity, and hence to overstock.