

**REPORT TO THE COMMISSIONER OF SOIL CONSERVATION ON THE  
CONDITION OF THE PASTORAL RESOURCE BASE  
NOVEMBER 2010**

**1. Introduction**

Western Australia's rangelands cover 87% of the state and include all but the south west. Pastoral leases, used for grazing of livestock on native vegetation, cover 35% (874,000 km<sup>2</sup>) of the rangelands, with Unallocated Crown Lands (UCL) and lands vested for conservation and Indigenous purposes making up the balance. There are currently 459 registered pastoral stations (made up of 510 pastoral leases) in Western Australia; there are 159 stations in the Northern Rangelands (Kimberley and Pilbara), 291 stations in the Southern Rangelands, and nine stations in the South West Land Division.

**2. Data Sources and Information Provided**

This report provides information on seasonal conditions, and information provided by the Western Australian Rangeland Monitoring System (WARMS) and the Pastoral Lands Board's (PLB) Annual Returns database.

The Western Australian Rangeland Monitoring System (WARMS) provides information on the trend in the pastoral rangelands at a regional scale. It does this through a representative network of point-based sites on which attributes of the soil surface and the vegetation are recorded. Site installation began in 1993, with the final sites installed in 1999. There are 1,622 sites, with 633 grassland sites and the remainder shrubland sites. Grassland sites are reassessed on a 3-year cycle; shrubland sites are reassessed on a 5-year cycle. The fifth assessment of the Kimberley (grassland) sites (Epoch 5) was completed in 2008. One full cycle (i.e. two assessments) has been completed for the shrubland sites, with nearly all of these sites now assessed three times. WARMS data are reported on a district or other regional level, not lease-level scale. In this report, data are provided at the Land Conservation District (LCD) level.

Seasonal condition is estimated for each reassessment period (epoch) at each site. 'Seasonal quality' describes the relative value of recent climate (principally rainfall) with respect to biological functioning. 'Biological functioning' broadly means vegetation growth as a basic resource for both livestock (forage) and fauna (food and shelter) and for soil protection.

All pastoral lessees in Western Australia submit an Annual Return to the PLB, providing, among other information, the numbers of stock held on the lease, defined by specific categories. This information is made available to the Department of Agriculture & Food Western Australia (DAFWA) for analysis and interpretation.

This report should be read in conjunction with the report provided in July 2009.

### **3. Seasonal Quality**

In general, seasonal quality has been above average in the Kimberley over the past 16 years, with the majority of WARMS sites classified as “above average” with no sites assessed experiencing a “below average” epoch during this period.

Seasonal conditions in the Pilbara grasslands have been variable, with the most favourable conditions being recorded in the 1990s, and a greater prevalence of “average” or “below average” years being recorded since 2000. The East Pilbara LCD has received good seasons over the last 6 years, while Ashburton, Lyndon and Roebourne LCDs received a preponderance of below average conditions.

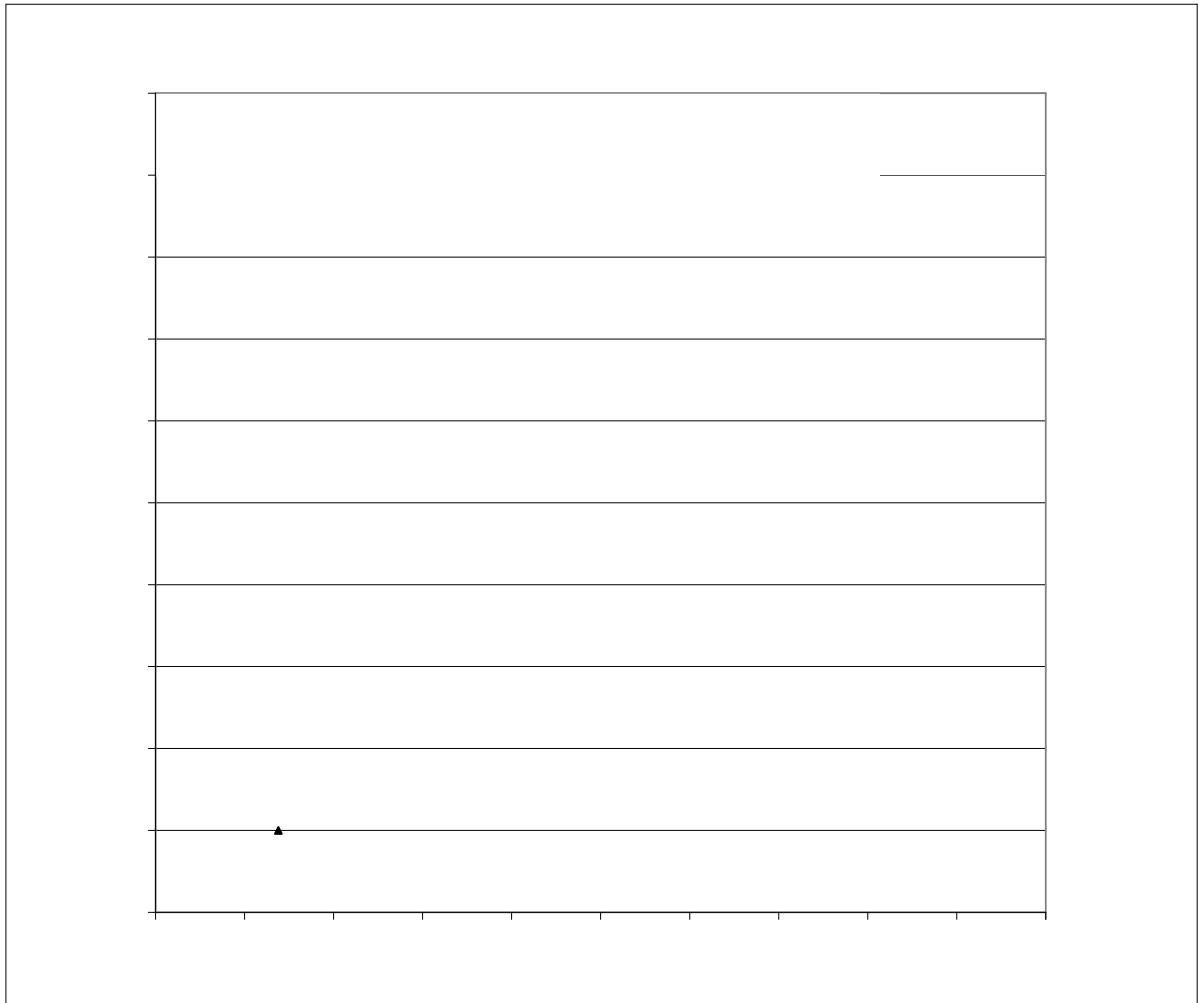
Seasonal conditions have also varied across the Shrublands over the period 1999 to 2009. Some LCDs (such as Murchison) have experienced an equal proportion of “above average”, “average” and “below average” seasons, while others (such as Shark Bay) have recorded predominantly “below average seasons”. The Binnu LCD has only two WARMS sites, and therefore the seasonal condition rating at these sites does not necessarily reflect the entire LCD.

Table 1.. **2009 Seasonal quality of Land Conservation Districts by APB region.**

Figure 1. Mean perennial grass frequencies, Kimberley LCDs, Epoch 1 to Epoch 6.

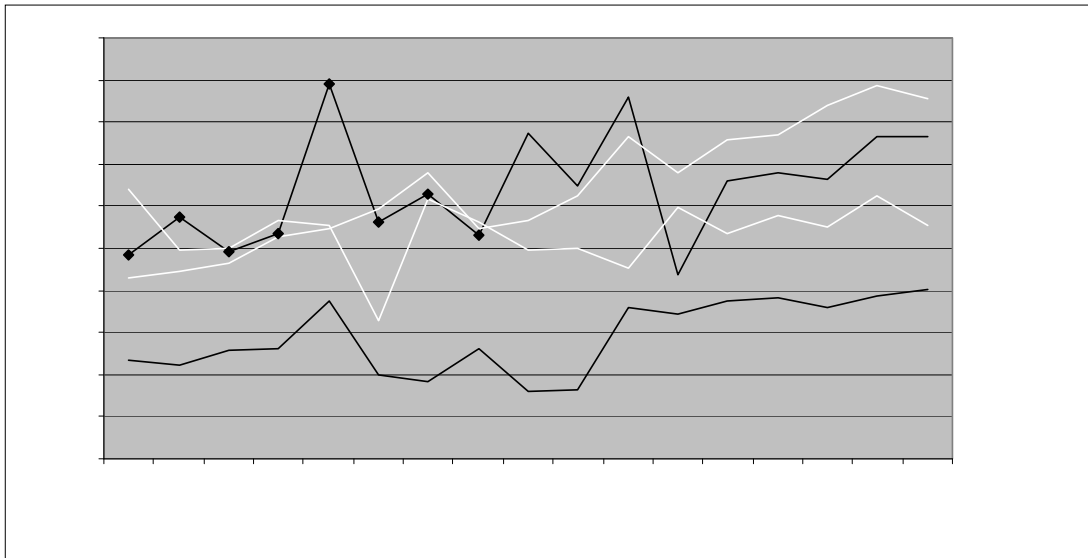


Figure 3. Shrub density on Shrubland WARMS sites as recorded in Epoch 2 and Epoch 3 (as at June 2010).



to 2009 has been variable across LCDs, with declines recorded in Roeburne and East Pilbara LCDs and increases in the De Grey and Ashburton LCDs. The estimated present carrying capacities (in cu/sq km) for the region are Ashburton LCD 1.5, De Grey LCD 1.6, East Pilbara LCD 1.0, Roeburne LCD 1.7 and Lyndon LCD 1.5.

Figure 4. Mean reported stock densities (cu/sq km), Kimberley LCDs, 1993 to 2009



2009 compared with 2000 had declined in eight LCDs and increased in eight. However, over the period there was considerable variation, both declines and increases being recorded in all LCDs.

Table 2. Reported stock densities (ha/dse) by LCD, Shrublands region, 2000 to 2009.

LCD NAME	Average Present cc	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Binnu	25.2	36.2	34.1	53.9	40.6	44.7	54.2	45.1	15.1	60.7	52.7
Cue	18.7	30.1	23.6	28.0	29.9	46.0	41.6	33.6	26.5	31.9	35.8
Gascoyne - Wooramel	11.4	9.4	10.6	13.6	16.8	14.3	11.6	11.3	11.0	10.1	9.0
Gascoyne Ashburton Headwaters	20.8	21.5	20.9	20.1	19.1	20.7	23.9	24.1	19.6	17.9	16.1
Kalgoorlie	20.3	36.9	37.9	27.0	34.0	37.5	37.2	45.2	53.4	46.5	52.4
Lyndon	9.5	9.9	10.0	8.9	10.8	10.7	8.7	9.9	9.7	8.1	8.2
Meekatharra	22.2	28.1	32.7	32.6	30.8	29.1	29.0	26.8	26.8	25.0	24.7
Mount Magnet	17.1	18.9	16.8	18.8	24.1	25.0	22.1	18.3	22.0	22.9	24.4
Murchison	18.1	16.4	21.3	23.5	32.2	40.6	33.4	26.4	29.0	22.2	24.6
North Eastern Goldfields	23.1	48.2	46.8	47.7	46.2	48.6	46.2	55.0	42.2	36.8	44.4
Nullarbor - Eyre Highway	24.2	25.5	28.5	24.5	23.5	22.7	25.0	32.9	27.8	32.0	32.8
Sandstone	19.2	52.8	51.6	84.7	77.5	64.0	99.2	85.0	74.1	64.2	58.5
Shark Bay	12.8	16.8	17.3	17.3	18.2	20.2	17.0	18.4	21.7	18.5	14.1
Upper Gascoyne	19.2	15.4	18.4	17.5	23.0	19.4	16.5	15.3	12.9	12.5	10.9
Wiluna	23.6	30.5	27.2	31.0	17.5	19.2	22.4	21.7	20.0	17.5	18.4
Yalgoo	18.1	18.9	21.0	23.4	33.0	39.1	37.4	30.9	25.6	28.8	28.0
Yilgarn	16.8	154.8	46.8	44.1	46.9	51.6	111.9	118.7	104.0	52.5	109.7

\* CC is carrying capacity. Present carrying capacity has been averaged for stations within each LCD. Note not all stations have a calculated present carrying capacity.

## Discussion

Given the favourable seasonal conditions and the generally stable stock numbers, the trend in the frequency of perennial grasses and the relatively stable range condition trend in the Kimberley region were not unexpected. The range trend in Kimberley grasslands continues to be stable. Conditions have encouraged an increase in the recorded frequency of perennial grasses at a time of increases in reported stock densities. Data do suggest that cattle numbers are above the present carrying capacity in the Derby West Kimberley LCD. However, the present carrying capacity assumes average seasonal conditions, while actual seasonal conditions have been most favourable for many years. Consequently, this is not seen to be a problem. However, if seasonal conditions were to decline, current stock numbers would require an immediate and substantial response from lessees.

This result is positive, but it should be remembered that WARMS reports on a regional or pasture type basis, not the basis of individual leases. Data from other sources (particularly the Pastoral Lease Assessment activities) do indicate that some individual leases have gone against this trend.

In the Pilbara, the increase in reported stock density has not always been accompanied by good seasonal conditions. In the period from Epoch 4 to Epoch 5, 62% of the sites in the Ashburton LCD were assessed as receiving a “below average” season (see previous report). However, stock densities continued to rise during this period (Figure 5), and the frequency of perennial grasses declined slightly to 79% in Epoch 5 and to 78% in Epoch 6 (Figure 2). The sites assessed as having a “below average” season have a mean perennial grass frequency of