Mitchell grass seems safe

The treeless, rolling downs of south-western Queensland nearly always have some grass cover. Even during drought, hardy Mitchell grass tussocks usually can be relied upon to provide some fodder for sheep and cattle.

However, fears periodically arise that heavy grazing, combined with the effects of drought, may damage the grassland so severely that it will not bounce back when the rains return. Fortunately, a study that has extended over more than 40 years at the ex-CSIRO field station 'Gilruth Plains', near Cunnamulla in south-western Queensland, suggests that this is unlikely to happen.

The 12-ha study area was grazed by Merino flocks probably since the 1880s, and in the 6 years from 1938 was subjected to intensive experimental grazing pressure at five times the district stocking rate. The resulting degenerate state of the pasture offered researchers an opportunity to study the regeneration of several natural pasture types. Since 1944, stock have been excluded from the area.

The study involved 13 fixed photo points, 45 transects, and sample patches each of 1 sq. m. The most recent surveys were carried out by Mr Owen Williams of the CSIRO Division of Water and Land Resources in 1981. Rainfall records for the period are also complete.

The data analysed by Mr Williams revealed three important phenomena.

The area recovered quickly from its degenerate condition. Surviving perennial grass plants played an important role in this. Within months, numerous grass shoots had emerged, and 2 years later a diverse flora was apparent. In another year the perennial grasses were large and vigorous.

Despite 29 years of no grazing, the number of species in the study area only marginally exceeded that occurring under normal station management. The number of Mitchell grass plants was little affected by grazing, too. A control area, which was grazed, recorded similar plant densities to those in the study area.

The populations of the major perennial grasses fluctuated markedly in response to rainfall. Dense grass stands with few non-grasses, springing up after rain, rapidly gave way to sparse grass stands and many non-grass plants.

Although the average life span of Mitchell grass tussocks is only 1 or 2 years, their continued presence is assured by some particularly long-lived individuals. One plant was recorded as persisting through more than 17 years.

The spasmodic growth of Mitchell grass reflects the irregular rainfall in the semi-arid zone (in the Cunnamulla area, good rains occur only every 8 years, on average). Periods during which tussocks virtually disappear from the landscape can extend for a decade or longer. However, seed from long-lived individuals will germinate when better times return.

It would not be possible for Mitchell grass to survive the bad times without the heavy clay soil on which it grows. The ground can become bare and still not erode, whereas less compact soils would soon disappear if that happened.

Mr Williams' assessment is that severe drought is likely to eliminate sheep from Mitchell grassland before they can do irreparable damage; the vegetation will persist.

Easy-care, no-hassle conservation — Mitchell grass (*Astrebla*) grassland in the 'South Oestrus' exclosure, 'Gilruth Plains', Cunnamulla, Queensland. O. B. Williams and B. Mackey. In 'What Future for Australia's Arid Land?' (Australian Conservation Foundation: Melbourne 1983.)

Two communities of urgent concern in Queensland: Mitchell grass and tropical closed forests. S. L. Everist and L. J. Webb. In 'A National System of Ecological Reserves in Australia', ed. F. Fenner, Report No. 19 of the Australian Academy of Science, Canberra 1975.