THE LAND SYSTEMS

MANSFIELD LAMD S YSTEM

Plate 19 – Mansfield land system, with hills of Eildon land system in distance

Carboniferous sediments in the northern rain shadow basins, with their characteristic woodland type of vegetation, have been mapped as the Mansfield land system. It is contiguous with the Mansfield land system of the Broken River catchment.

Plains, rolling hills, cuesta and table tops occur but the regional relief is relatively gentle. Hill predominate in the east, but the west consists mainly of plains which continue up the floors of the major adjacent valleys, and occupy most of the are now flooded by Lake Eildon. Most of the rocks are red to purple Carboniferous shales and sandstones, or deep alluvial deposits derived largely from them. The climate is markedly seasonal, with a cool, wet winter and a hot dry summer.

Dominant native vegetation is a woodland of red gum and yellow box with grey box in the drier areas. The drainage lines are areas of low relief are occupied by red gum in savanah woodland for, associated with yellow box on the between drained sites. The original floor was apparently dominated by kangaroo grass (*Themeda australis*, with rushes and reeds in the creek lines. Flooded areas are characterised by large red gums and the absence of grasses on the floor which is mainly covered with twigs and leaf litter. Along creek lines the red gum may approach a tall woodland or forest form. A mixed tall woodland with yellow box is often found in fringe areas on steeper slopes.

In a few paddocks large candlebarks have been left standing and, in lower rainfall areas, grey box is found on small, better drained rises. The boundary of the red gum country with the box area is characterised by a belt of yellow box.

Hill slopes on Carboniferous sediments carry colluvial earthy materials containing weathered rock fragments. On the steeper slopes, stony brown earths have developed in this colluvium, while the on the lower slopes leptopodzols have formed. The former are freely drained, dry out early in summer and respond markedly to superphosphate, resulting in the dominance of subterranean clover. It is probable that they are deficient in sulphur as well as phosphorous. The leptopodsols lack phosphorous but are otherwise chemically fertile.

The plains have gilgaied solodic soils and in low lying sites these are buried under a mantle of detritus in which leptopodsols are developed. Along creeks on the flood plains, there are dark clayey soils recognised as prairie soils in upper reaches and chernozem soils along the lower creeks.

Solodic soils and leptopodsols on the plains are both liable to surface waterlogging in wet winters. Many of these areas were swamps before being drained. The solodic soils require phosphorous but are well supplied with potash, lime and magnesium. The leptopodsols on redistributed detritus, in contrast to those derived directly from rock, are relatively low in phosphorous, potash and lime. The dark clayey soils are fertile, and the chernozemic soil is suitable for fodder cropping. All soils on the plain have dispersible clay subsoils and therefore are potentially unstable.

On the steep hills excessive runoff, resulting from clearing and overgrazing, has caused severe sheet erosion at the higher level. On the lower slopes and on the plains, this runoff has resulted in gullying and stream bank erosion. These hills typify the erosion control problems which develop from the clearing of country which is too steep for access by cultivation machinery.

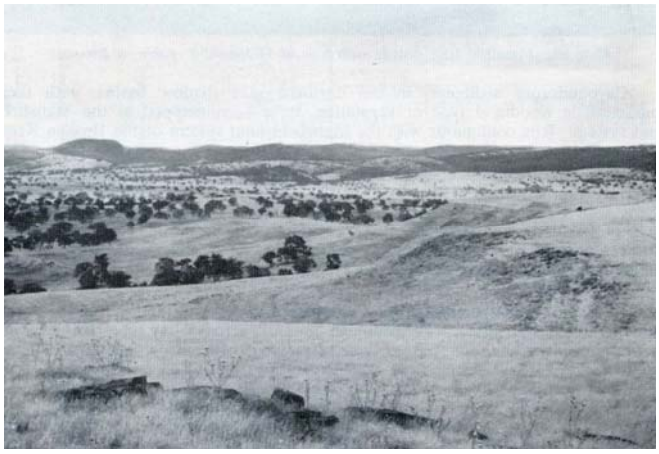


Plate 20 – Hilly part of Mansfield land system, with Eildon and Maintongoon land systems in distance

On the plains, the erosion hazard is low, except where runoff water is received from nearby hills. The low hazard is because of the low relief, but the dispersible soils are prone to tunnel and gully erosion. Consequently there is gullying in major water courses and tunneling of earthen banks on the plains.

Because of its combination of climate, soils and topography, the land system has considerable potential for pastoral activities. Cattle and sheep grazing constitutes the major present land uses, whilst the flats are suitable for dairying and fodder cropping.

In the 1870s, an attempt to grow wheat and oats from the Merrijig road to the Broken River proved to be uneconomical. Apart form this, cropping has been confirmed to river flats as a support activity to dairying. Some cattle, mainly cows and young stock, are moved each year to alpine grazing areas.

The Mansfield land system is of little value in the production of water. Winter stormwater runoff provides the greater part of the water which it contributes to Lake Eildon, but it is heavily sedimented. It has been estimated that only twenty per cent of the rainfall finds its way to Lake Eildon, amounting to two percent of the total inflow.

The area, with the Eildon land system, is one of the chief contributors of sediment, and the aim of management must be to reduce the amount of silt entering the reservoir.

The present pasture lands on the hilly areas include the longest improved and best in the catchment, but they do not have a sufficient proportion of deep rooted perennial plants to balance the widespread subterranean clover. The existing deeper rooted native species cannot withstand heavy grazing and, in late summer, the clover dies back, resulting in a high percentage of bare ground. Introduced deep rooted perennial plants are required, such a phalaris and cocksfoot. On land too steep to be cultivated, this can be done with special aerial seeding techniques, followed by appropriate management. Another problem is that many paddocks are too large or do not conform sufficiently with land classes. Re-subdivision of this land, to broadly separate hills, gentle slopes, flats and swamps is desirable.

Attention to re-subdivision and to the composition of pastures would substantially reduce the hazards of erosion, runoff and sedimentation in Lake Eildon, with the advantages of increased productivity from the land.

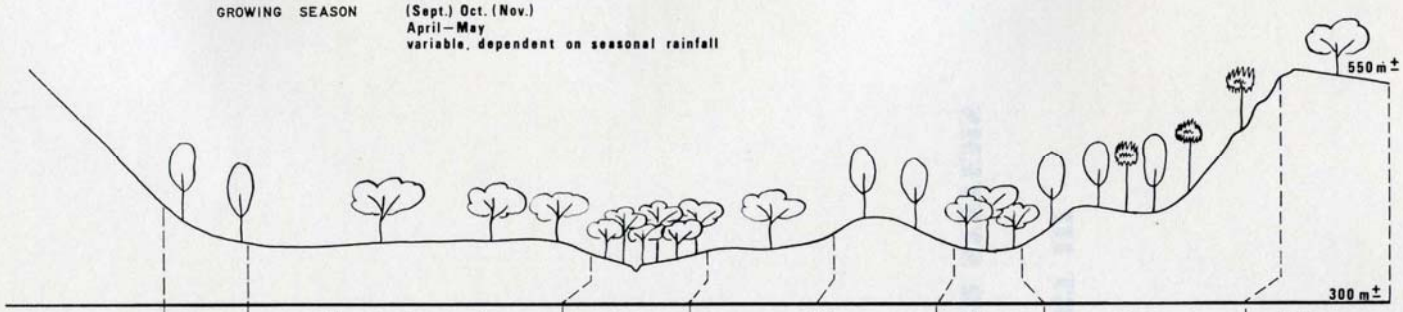
MANSFIELD LAND SYSTEM

THE MANSFIELD PLAIN AND ASSOCIATED FLAT-TOPPED AND CUESTA FORM HILLS TO THE EAST, PLUS THE BROADER LOW GRADE ADJACENT RIVER VALLEYS

W ← ASPECT → E

CLIMATE

RAINFALL	650 mm – 750 mm, fairly evenly distributed, dry summer, cold wet winter.
MEAN TEMP. APPROX.	January 24° C July 7° C
GROWING SEASON	(Sept.) Oct. (Nov.) April – May variable, dependent on seasonal rainfall



Local Factors	Steeper fringes	Plain or broad stream valley	Creek	Hill		Minor drainage line	Questa	Table top
Vegetation	Savannah, savannah woodland		Woodland or forest	Savannah woodland			Woodland	
	E. mellio-dora	*E. camaldulensis*	*E. camaldulensis*	*E. camaldulensis*	*E. melliodora*	*E. camaldulensis*	*E. melliodora* *E. macrorhyncha*	*E. camaldulensis*
Soils	Podsolic, solodic soils	Leptopodsols in places over gilgaied solodic soils	Leptopodsols, chernozems	Leptopodsols	Podsolic soils	Prairie soils	Colluvial brown earths, prairie soils in drainage lines	Skeletal and/or podsolic soils
Parent Material	Redeposited soil materials. Deep alluvial deposits (clays)		Redeposited soil. Deep deposits	Redeposited soil material	Carboniferous sediments	Detritus from Carb. sediments	Carboniferous sediments	
Erosion Status	Gully erosion in most drainage lines		Gully erosion in major drainage lines	Mostly sound		Sound	Sheet erosion, severe to mild	
Land Use — Present	Grazing, sheep and cattle, mainly on native pasture with volunteer subterranean clover Limited water supply, limited recreation							
Land Use — Recommended Management	Improvement of pastures, limited stocking rates on steep slopes, treatment of larger gullies, retention and introduction of trees							

Figure 16 – Mansfield land system