

24. MIRRANATWA LAND-SYSTEM

All the areas of granite and granodiorite, totalling 142 square miles, make up the Mirranatwa land-system. The largest areas are in Victoria Valley in the Grampians, in the Stawell-Great Western district, and between Moyston and Maroona. Hills, rolling plains and undulating plains make up the topography and their features of environment and land-use are shown in Figure 28. A feature of these granitic areas is the large numbers of rock outcrops scattered over the ground. The largest ones are erect and several feet in height and the smallest are only one or two feet across and barely protrude out of the ground.

The land-system is divided into four land-units using differences of land-form and rainfall as the basis. Lexington land-unit takes in the areas of undulating plain, Mirranatwa land-unit takes in the areas of rolling plain, and Jalur and Eastern Black Range land-units take in the hills.

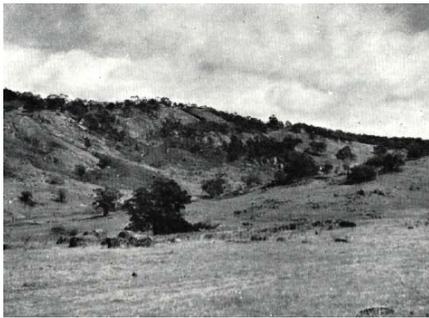


Plate 37 – Rock outcrops are common in the granite area. In the foreground and mid-ground are rolling slopes of Lexington land unit and in the background are the lower slopes of the Eastern Black Range land unit.

Land-Units

Jalur and Eastern Black Range land-units

The granite hills in Victoria Valley, between the Serra Range and Victoria Range, have been mapped as the Jalur land-unit. Here the average annual rainfall is about 30 inches. The steeper slopes are covered by a short woodland of m growing in deep sandy lithosols and leptopodzols. The lower slopes are covered by tall forests of brown stringybark growing in deep solodic soils. Most parts of the hills are within the Grampians Reserved Forest and their northern and western slopes form part of the headwater catchments of the Glenelg River. The tall forests of brown stringybark help to support a small timber industry around Strachans. These hills therefore require a system of management to meet the demands of water conservation and forestry.

The granodiorite hills at Mafeking, beneath Major Mitchell's Plateau in the Mt. William Range, are included in Jalur land unit and here, too, stringybark trees are extracted for milling.

Eastern Black Range land-unit covers the Black Range near Stawell. This range is distinguished by its prefix "eastern" from the "western" Black Range made of Grampians sandstones near Rocklands Reservoir. This land-unit has an average annual rainfall of 22 to 23 inches and its vegetation is a short woodland of long leaf box, yellow boy, and black wattle mostly held as freehold land and is used for intermittent light grazing by sheep.

Mirranatwa and Lexington land-units

Mirranatwa and Lexington land-units are those parts of the land-system which are outside the hilly areas and are cleared and used for farming. Mirranatwa land-unit has an average annual rainfall of 25 to 27 inches and it is mostly a rolling plain although there are some areas of undulating plain. it occurs in three areas the biggest is in Victoria Valley and the other two are in the Mafeking area and at Zumstein's. Lexington land-unit is located between Moyston and Maroona and also near Great Western. It has an average annual rainfall of 22 to 23 inches and it is mostly an undulating plain although there are rolling plains and a ridge of low hills at its southern end near Maroona.

Solodic soils predominate throughout the two land-units and their development on granitic rocks has given these soils features which make them quite different from solodic soils on other parent materials in the survey. The A horizon is comparative deep being 18 to 24 inches, and it has gritty and coarse textures because of the abundant quartz grains. The A₁ horizon is thin and overlies a deep A₂ horizon which typically and uniformly off-white and structureless throughout. The B horizon is a heavy clay with mottled colours of grey, yellowish brown and red. There are small differences in the texture of the A horizon and in the depth to the clay in different areas of the two land-units. Around Mirranatwa in the Victoria Valley, for instance, the A horizon is a coarse sandy loam and clay is about 22 to 24 inches below the surface. Near Great Western, the clay is at similar depths but the A horizon is gritty, loamy coarse

and changing with depth to coarse sand. Between Moyston and Maroona, the clay is closer to the surface sand above the clay.

On the undulating plains there are red gum savannah woodland which extend up to the middle slopes of the rolling plains but are replaced on the upper slopes by a woodland of yellow box, manna gum and, in some areas, messmate.

The common form of land-use in Mirranatwa and Lexington land-units is wool growing on native and introduced pastures. Native pastures are still a large proportion of the total acreage. The sown species are usually Bacchus Marsh and Mt Barker varieties of subterranean clover, phalaris and perennial ryegrass, and they have raised the carrying capacity of farm about half a dry sheep per acre to two dry sheep per acre.

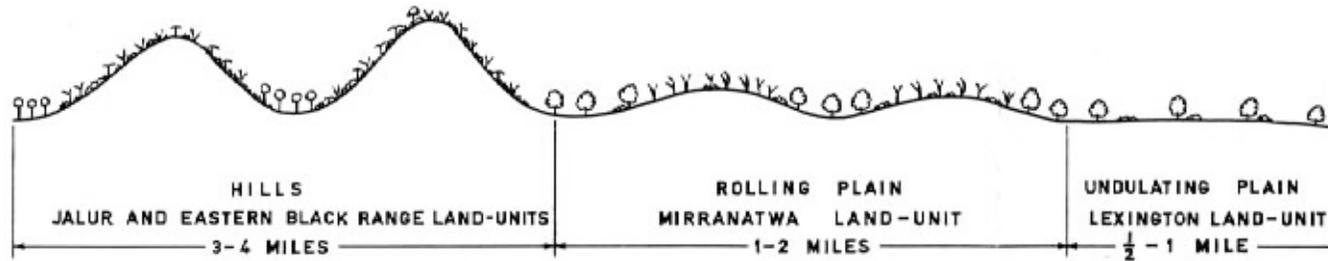
The higher average rainfall in the Mirranatwa land-unit gives it a greater potential for perennial species than Lexington land-unit, particularly on the lower slopes and flat land where white and strawberry clovers could be useful. Mirranatwa land-unit owes its greater falls of rain to its situation in the midst of the Grampians. It was pointed out in the chapter on climate that these mountains receive most of their rain in winter and their summer rainfall is only a little above the other parts of the survey. That is, the growing season in Mirranatwa land-unit is longer than in Lexington land-unit because of the higher reserves of moisture remaining in the soil in the late spring and early summer and not because of more rain being received in the summer. For this reason, perennial clovers and perennial ryegrass will succeed only on the lowest and wettest topographic positions and elsewhere over the landscape, mid-season or late-season subterranean clovers' and phalaris will be the most suitable species.

Superphosphate is the only fertilizer in common use although experimental pasture trials on granitic solodic near Maroona and Stawell indicated a need for molybdenum and, on the more acid soils, molybdenum plus lime (Newman 1955, 1956). Also, the deep sandy A horizons give rise to the possibility of a potassium deficiency wherever introduced pastures are slow to establish. For these reasons, the granitic solodic soils are less productive and more in need of fertilizers than the solodic soils on neighbouring parent materials.

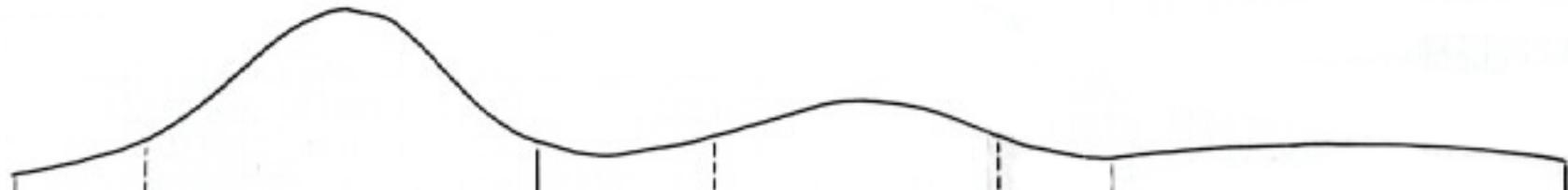
The erosion hazard under native pastures in the two land-units is moderate on undulating slopes and high on rolling slopes, but introduced pastures greatly reduce the possibility of erosion. Sheet erosion and gullying are present but they are less of a problem than salting which is found along many of the drainage lines and shallow creeks. By contrast with Ararat land-system, there is less erosion because the relatively deep and sandy A horizons can absorb more water and, especially under a vigorous pasture cover, sheet erosion is negligible.

MIRRANATWA LAND-SYSTEM

(i) Distribution of land-forms



(ii) Land-system diagram



Climate		Average annual rainfall 21-30 inches : growing season April to September and October				
Land Form		Hill		Rolling plain		Undulating plain
Geology		Granite and granodiorite				
Topography		Steep slopes >10%		Moderate slopes 5-10%		Gentle slopes 2-5%
Soil		Solodic soils	Skeletal soils	Yellow and brown solodic soils (dominant), skeletal at outcrops		
Land Class		4A	5 and 6	2B	4A and 4B	2B
Land Use	Present	Protection forest and timber extraction in Jalur land unit : light grazing in Eastern Black Range land unit		Wool growing on native and introduced pastures		
	Problems			Controlling salting and raising the productivity of the pastures		
Water Erosion	Hazard	High		Moderate to high		Low to moderate
	Actual	Sheet erosion in Eastern Black Range land unit		Salting, sheet erosion, gullyng		Salting, sheet erosion, gullyng
Native Vegetation		Jalur land unit – Dry sclerophyll forest and scrub with brown stringybark, messmate Eastern Black Range land unit – Short woodland and tall woodland of yellow box and long leaf box		Savannah woodland of red gum	Tall woodland of yellow box, manna gum, messmate	Savannah woodland of red gum

Figure 28 – Mirranatwa Land System