

15. PARRIE YALLOAK LAND-SYSTEM

In the south-east of the survey area, between Moyston and Glenthompson, there are many swamps and lunettes, some of which are very large and others by comparison are very small. The eastern boundary of this area is sharply defined by the edge of a basalt plain and by rising land of sedimentary rocks. Its western boundary is provided in turn by outwash slopes of the Grampians, a dissected tableland, the Wannon River and the edge of the basalt plain. There is also a small but identical area at the entrance to Victoria Valley, north-west of Dunkeld. These two areas of swampy land total 151 square miles and have been mapped together as the Parrie Yalloak land-system.

The land-system occupies a flat depositional plain of Pliocene and Pleistocene sands and clays, and in this respect it has a similar geomorphological history to Mt. William Creek land-system. However, it differs from that land-system by having swamps and lunettes and by the absence of streams and flood plains.

The diagram of Parrie Yalloak land-system in Figure 19 shows the flat plain, swamp and lunette land-forms and their features of environment and land-use. The swamps are of two kinds according to their size, salt content and utilization similarly the lunettes differ in size, parent materials soils, land-use and erosion hazard. The land-system is divided into two land-units on this basis and further description of the land-system is on the basis of the land-units and land-forms.

Land-Units

Parrie Yalloak land-unit is the larger of the two, extending across 91 square miles of the land-system and including the small segment in the Victoria Valley. The swamps and lunettes are located along the edge of the basalt plain, and Hills (1959) considers that they were formed after the lava flows blocked a number of streams flowing out of the Grampians.

The swamps are large, ranging in size from 1,000 acres to 3,700 acres, and they occupy a total area of 29 square miles or a third of the land-unit. They either are covered with a permanent sheet of fresh water or have been reclaimed for agriculture. The soils in the reclaimed swamps are clays, either meadow soils or acidic brown clays, and support a grazing and cropping programme. They are wet enough to support perennial pastures of white clover and strawberry clover.

There is no erosion on the reclaimed swamps except for Marney's Swamp in Victoria Valley where the finely-aggregated surface soil is susceptible to wind erosion when dry and pulverized by excessive cultivation. Movement of this material has formed deposits up to two feet thick on the eastern margin of the swamp.

The lunettes associated with these swamps are correspondingly large, ranging in size from 145 acres to 2,000 acres, and they occupy a total area of 5,700 acres. They are composed of Early Holocene wind-deposited sand and their soils are iron leptopodzols of the Nekeeya series which have been described in Chapter Five. The vegetative cover is a heath woodland of manna gum and bracken which is characteristic of these particular lunettes and makes them clearly distinguishable on aerial photographs (Plate 2).

Very little use is made of the lunettes for agriculture because their soil and the climate make pasture establishment difficult. The chief difficulty is the excessive drainage through the deep deposits of sand together with the low water-holding capacity of the sand. Also there are rapid and wide fluctuations of soil moisture which cause a moisture stress on germinating seeds and seedlings. A further problem is the deficiency of a number of essential plant nutrients and this requires heavy expenditure on a range of fertilizers.

The hazard of wind erosion is high on the lunettes and a protective plant cover must be retained at all times. Manna gums and bracken are very effective in preventing erosion, but it has occurred where the lunettes have been cleared and unsuccessfully used for pasture establishment.

The third land-form in Parrie Yalloak land-unit is the flat plain on which solodic soils predominate. The A horizons are either sandy loams throughout or loams over sandy loams. The clay is usually between six and thirteen inches beneath the soil surface.

Fine wool produced on native and introduced pastures is the chief form of landuse on the flat plain. Mt. Barker and Bacchus Marsh varieties of subterranean clover and perennial ryegrass and phalaris are the common pasture species. Superphosphate is the only fertilizer needed for the pastures.

A savannah woodland of red gum is widespread on the flat plain, and yellow box is a secondary species, particularly along the western boundary of the land-unit.

Stavely land-unit is the second subdivision of Parrie Yallock land-system and takes in parts of the parishes of Lalkaldarno, Bunnugal and Parrie Yallock. Here the swamps are small, averaging 31 acres, and saline. In summer, many of them dry out leaving a salt deposit, and all have salt-tolerant plants (mainly *Salicornia* spp.) around their margins.

The lunettes vary in their parent materials and soils. The commonest soil type has developed on a clay material and it is characterized by a red light clay in the subsoil. Overlying the clay is an A horizon of brown and reddish brown fine sandy loam or fine sandy clay loam. On some lunettes rendzina soils have developed on calcium carbonate marl.

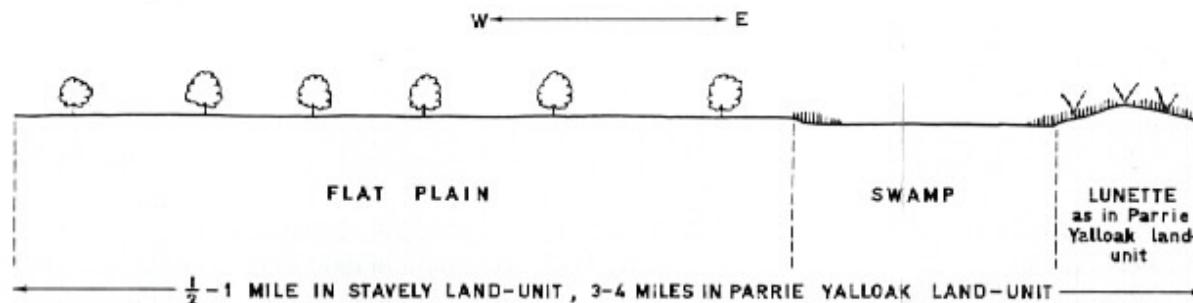
Productive pastures have been established on the lunettes and they are grazed by sheep and cattle as an integral part of the paddock in which they are located. They have no problems of plant nutrition or water supply. Erosion hazard and erosion are both negligible.

The flat plain land-form has solodic soils and the same features of land-use and erosion hazard as those for the flat plain in Parrie Yallock land-unit.

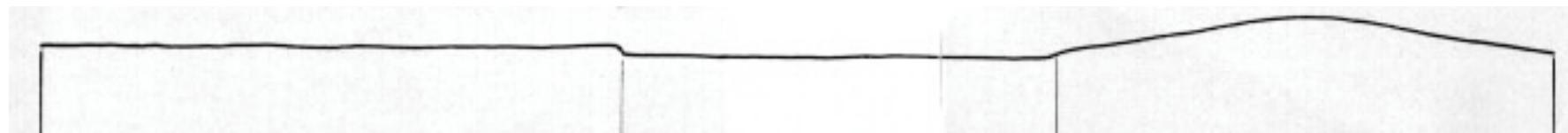
Most of the Stavely land-unit is a man-made grassland. The few trees that remain indicate that the original vegetation was a woodland of red gum and swamp gum.

PARRIE YALLOAK LAND-SYSTEM

(i) Distribution of land-forms



(ii) Land-system diagram



Land-Unit	Parrie Yalloak and Stavely	Parrie Yalloak	Stavely	Parrie Yalloak	Stavely
Climate	Average annual rainfall 23-24 inches : growing season April to October				
Land-Form	Flat plain	Swamp		Lunette	
Geology	Plio-Pleistocene fluviatile sediments			Early Holocene sands and clays	
Topography	Flat and up to 1% slopes	Flat		Short gentle slopes up to 5%	
Soil	Solodic soils (dominant) Solonetzic soils (minor)	Clays where reclaimed	Saline	Iron leptopodzol (Nekeeya series)	Mainly reddish clays
Land-Class	2A	2A (reclaimed) 6 (free water)	6	Possibly 5 Probably 6	2B
Land-Use	Present	Fine wool grown on introduced pastures	Wool growing, water supply	Unused	Unused
	Problems	Waterlogging in wet seasons			Finding a suitable form of land-use
Water and Wind Erosion	Hazard	Very low	None	High (wind erosion) Low (water erosion)	Low
	Actual	Some slight salting and shallow gullies	None	Patches of sand drift, wind scald	None
Native Vegetation	Structure	Savannah woodland	Woodland around edge	Heath woodland	Cleared
	Species	Red gum (dominant) Yellow box (minor)	Red gum	<i>Salicornia</i> spp.	Manna gum and bracken

Figure 19 – Parrie Yallooak Land System