

5. NATIVE VEGETATION

The ecological basis of land systems involves the reconstruction of the original vegetation communities, even if they have been thoroughly altered by man's activities after settlement. However, clearing, grazing and other human pressures have meant that it has often not been possible to assess accurately the distribution and original composition of the grasslands and open woodlands which predominate on the basaltic plains.

The remaining native vegetation of the region is structurally diverse, as would be expected from the wide variety of climates and soils which occur in different parts.

The presumed original vegetation communities and their distribution are listed in Table No. VI. Appendix 4 gives a species list for the area and the species found within each land component. This list is not a complete record, it is taken from only a limited number of sample sites. No samples were taken from Kangaroo Ground land system. The structural terminology used in this report is based on Specht (1970); the species names are those in Willis (1970, 1972).

Grassland and Open Woodlands

Areas of treeless grasslands and open woodlands occur in dry and warm parts of the region; frequently they are associated with soils of high clay content.

The ecological reasons for the paucity of trees in these areas are not clear. Several factors have been suggested, which include:

- (1) the shrink/swell capacity of the soil which may damage the roots of the young tree seedlings;
- (2) the severe moisture stress which occurs over the summer months. This is attributable to the combination of low rainfall, low permeability of the clay and shallow soils. Rain cannot penetrate rapidly into the soil so that, in summer, the moisture is lost quickly through evaporation and, being shallow, the soils do not have deep moisture reserves.

It seems that the herbs and grasses are better able to obtain moisture than the trees and can therefore outcompete the tree species, particularly at the seedling stage.

Eucalyptus camaldulensis is able to grow in many places on the heavy clay soils, often where there are periods of flooding and waterlogging. *E. ovata* occurs with *E. camaldulensis* where the topsoil at least is a little less clayey, and *E. melliodora* and *E. microcarpa* where the soil is less clayey and waterlogging is infrequent.

Table VI – Main species of formations and their distribution

FORMATION	ASSOCIATION	OCCURRENCE
Grassland	<i>Stipa</i> spp., <i>Danthonia</i> spp., <i>Themeda</i> spp. <i>Danthonia</i> spp., <i>Stipa</i> spp., <i>Themeda australis</i> , Composites <i>Stipa</i> spp., <i>Danthonia</i> spp.	Cottrell Footscray Maribyrnong
Open Woodland	<i>E. ovata</i> , <i>E. radiata</i> , <i>E. obliqua</i> , <i>E. rubida</i> , <i>E. viminalis</i> <i>E. camaldulensis</i> , <i>Casuarina stricta</i> , <i>C. luehmannii</i> <i>E. camaldulensis</i> <i>E. radiata</i> , <i>E. ovata</i> , <i>E. pauciflora</i> , <i>E. viminalis</i> , <i>E. obliqua</i> , <i>Acacia dealbata</i> , <i>A. melanoxylon</i> <i>E. camaldulensis</i> <i>E. camaldulensis</i> , <i>E. viminalis</i> , <i>E. ovata</i> , <i>A. melanoxylon</i> , <i>C. stricta</i> , <i>A. dealbata</i> <i>E. camaldulensis</i> , <i>E. microcarpa</i> , <i>E. viminalis</i> , <i>E. ovata</i> , <i>Acacia</i> spp., <i>Casuarina</i> spp.	Marnong Djerriwarrh Rockbank, Whittlesea Romsey Wollert Mickleham Monegeeta
Woodland	<i>E. radiata</i> , <i>E. goniocalyx</i> <i>E. leucoxylon</i> , <i>E. microcarpa</i> , <i>E. melliodora</i> , <i>E. viminalis</i> , <i>E. camaldulensis</i> <i>E. radiata</i> , <i>E. camaldulensis</i> , <i>E. rubida</i> , <i>C. stricta</i> , <i>E. ovata</i> <i>E. macrorhyncha</i> , <i>E. melliodora</i> , <i>E. ovata</i> , <i>E. rubida</i> <i>E. radiata</i> , <i>E. goniocalyx</i> , <i>E. ovata</i> , <i>E. camaldulensis</i> , <i>E. obliqua</i> , <i>Acacia</i> spp.	Macedon Sunbury Mernda Doreen Mt. Charlie
Low Open Forest	<i>E. dives</i> , <i>E. goniocalyx</i> , <i>E. melliodora</i> , <i>E. radiata</i> , <i>E. obliqua</i> , <i>E. viminalis</i> <i>E. dives</i> , <i>E. obliqua</i> , <i>E. goniocalyx</i> , <i>E. radiata</i> , <i>A. dealbata</i> , <i>E. macrorhyncha</i> , <i>A. melanoxylon</i> <i>E. obliqua</i> , <i>E. rubida</i> , <i>E. radiata</i> , <i>E. camaldulensis</i> , <i>E. dives</i> , <i>E. goniocalyx</i> , <i>E. melliodora</i>	Macedon Springfield Mt. Charlie
Open Forest	<i>E. obliqua</i> , <i>E. viminalis</i> , <i>E. radiata</i> , <i>E. ovata</i> , <i>Acacia</i> spp., <i>Pteridium esculentum</i> <i>E. obliqua</i> , <i>E. radiata</i> , <i>E. viminalis</i> , <i>E. ovata</i> , <i>E. camaldulensis</i> <i>E. camaldulensis</i> , <i>E. radiata</i> , <i>E. microcarpa</i> , <i>E. melliodora</i> , <i>Acacia</i> spp. <i>E. obliqua</i> , <i>E. radiata</i> , <i>E. dives</i> , <i>E. goniocalyx</i> , <i>E. viminalis</i> , <i>E. delegatensis</i> <i>E. obliqua</i> , <i>E. dives</i> , <i>A. mearnsii</i> , <i>E. ovata</i> , <i>E. viminalis</i>	Cobaw Mt. William Greenvale Macedon Rockford

FORMATION	ASSOCIATION	OCCURRENCE
	<i>E. radiata</i> , <i>E. obliqua</i> , <i>E. dives</i> , <i>E. viminalis</i> , <i>E. ovata</i> <i>E. obliqua</i> , <i>E. radiata</i> , <i>E. cypellocarpa</i> , <i>A. melanoxylon</i> <i>E. goniocalyx</i> , <i>A. melanoxylon</i> , <i>E. radiata</i> , <i>E. dives</i> , <i>E. microcarpa</i> , <i>E. obliqua</i> , <i>E. camaldulensis</i> , <i>E. viminalis</i> , <i>A. dealbata</i> <i>E. rubida</i> , <i>E. radiata</i> , <i>E. ovata</i> <i>E. dives</i> , <i>E. goniocalyx</i> , <i>E. obliqua</i> , <i>E. radiata</i> , <i>E. cypellocarpa</i> , <i>E. macrorhyncha</i> <i>E. macrorhyncha</i> , <i>E. polyanthemos</i> , <i>E. radiata</i> , <i>E. melliodora</i> , <i>E. obliqua</i> , <i>E. goniocalyx</i> , <i>E. sideroxylon</i> , <i>E. rubida</i> , <i>E. viminalis</i> , <i>E. ovata</i> <i>E. rubida</i> , <i>E. polyanthemos</i> <i>E. radiata</i> , <i>E. viminalis</i> , <i>E. obliqua</i> , <i>A. melanoxylon</i> <i>E. delegatensis</i> , <i>E. cypellocarpa</i> , <i>E. radiata</i> , <i>E. obliqua</i>	Wombat Kinglake Darraweit Guim Doreen Humevale Arthurs Creek Kangaroo Ground Pretty Sally Mt. Disappointment

Woodlands

Woodland communities, which include amongst others *E. goniocalyx*, *E. viminalis*, *E. rubida* and *E. macrorhyncha*, are found where rainfall is intermediate (approximately 625-700 mm) and the soils possess loamy or sandy surface layers overlying clayey subsoils. *E. goniocalyx* is common in the east of the region where the soils are shallow and stony, e.g. on steep hill slopes with a westerly or northerly aspect. These soils are relatively dry through a combination of good drainage, resulting from high run-off and/or high permeability of the soils, and of exposure to hot, drying north and westerly winds and more intense solar radiation. It is likely that pastures developed in such habitats will be less productive for the same reasons.

The distribution of the other species and their various association, mentioned in the text and in Table No. VI, is also related to soil properties, climate and microclimate and fire history. A detailed study of these ecological factors was outside the scope of the present survey; however, a general observation is that within the woodlands the gums are more prominent in sheltered areas, whereas the boxes prefer more exposed areas on the shallower soils. There is an isolated occurrence of *E. pauciflora* on well-drained reddish soils in the Romsey land system. This may be related to low summer rainfall and low winter temperatures.

Open Forests

Open forests which occur in the higher rainfall zones of the elevated parts in the Great Dividing Range occupy a small percentage of the survey area. They are usually also associated with deeper soils. There are several associations depending on rainfall, aspect, elevation, protection, etc. The open forests are tallest in the wettest and coolest locations of Mt. Macedon, Kinglake and Mt. Disappointment. They contain *E. cypellocarpa*, *E. obliqua* and *E. radiata* and, where rainfall exceeds 800 mm, *E. delegatensis*. *E. delegatensis* has also been planted in more or less suitable areas where it did not occur before. Other common species in the open forests are *E. viminalis*, *E. rubida*, *Acacia melanoxylon* and *A. mearnsii*.

Associations indicative of slightly lower rainfalls are extensive. The most common species in these associations are *E. obliqua*, *E. radiata*, *E. viminalis* and *E. ovata*. Mixed in with these common species may be found *E. dives*, *E. goniocalyx*, *E. macrorhyncha*, *E. melliodora*, *E. microcarpa*, *E. polyanthemos* and *E. rubida* in varying but minor proportions. The boundary between these associations is frequently diffuse, and the ecological factors which determine their composition and distribution are probably subtle and complex.