

## Characteristics of Threatened Communities

To help field recognition of the various communities of flora and fauna currently listed as 'threatened' under the FFG Act, their distinguishing characteristics are set out below. This information is provided by the FFG Scientific Advisory Committee and is based on the attributes used to define those communities when they were added to the Threatened List.

Where a scientific name has been revised since a community was originally listed, the name currently in use has been included together with that used originally (e.g. *Astelia alpina* = *A. alpina* var. *novae-hollandiae* : *Astelia alpina* was the name used originally, *A. alpina* var. *novae-hollandiae* is the current name). Current botanical names follow those used in *A Census of Vascular Plants of Victoria* Walsh & Stajsic (ms Feb 2013). Community descriptions are in alphabetical order.

### Alpine Bog Community

The Alpine Bog Community is commonly described as bog or moss bed with the dominant vegetation including Spreading Rope-rush (*Empodisma minus*), Candle Heath (*Richea continentis*), Snowgrass (*Poa costiniana*), Sphagnum moss (*Sphagnum* spp.), Alpine Baeckea (*Baeckea gunniana*), Silver Astelia (*Astelia alpina* = *A. alpina* var. *novae-hollandiae*) and Fen Sedge (*Carex gaudichaudiana*).

This community appears to be restricted to permanently wet sites along drainage lines and valley floors with a low to moderate slope and hillside slopes in the vicinity of springs. Sphagnum moss is a characteristic feature and can form an extensive cushion or terrace, absorbing and restricting water flow. Peat soils accumulate through the slow decomposition of the sphagnum and other plant material. Extensive peat soils can be present depending on the substrate on which the bog has formed. On rocky areas the peat/bog may only be a metre or so deep, in other areas the peat formation can be several metres deep.

The Alpine Bog Community is represented in Victoria by a number of fragmented and isolated sites scattered across the Australian Alps and occurring in alpine, subalpine and montane environments typically above the climatic tree-line (at or above 1200 m ASL). The community may also occur at lower altitudes in areas known as 'frost hollows' which prevent the establishment of trees within the community.

### Alpine Snowpatch Community

Alpine Snowpatch Community includes two main vegetation associations: Short-turf Snowpatch and Diuturnal Snowpatch. Characteristic species found in Short-turf Snowpatch includes sedge (*Carex hebes*) and a variety of small herbaceous plants with tussock-forming *Poa* virtually absent and the plants rarely exceeding 10 cm in height. Diuturnal (long-continuing) Snowpatches occur on higher slopes and retain snow for longer periods, with the upper areas of these communities dominated by Silver Snow Daisy (*Celmisia asteliifolia*). On the downslope areas where the soil profile can be deeper, Snowgrass (*Poa fawcettiae*) gradually becomes dominant.

Snowpatch vegetation communities are rare in Australia, typically occurring on the steeper sheltered slopes, often with a south-eastern aspect, where snow can persist into warmer months of the year (December and January). Snowpatches vary considerably in shape, size and permanency: some last only for weeks, others persist for years. Their vegetation composition varies considerably, being strongly influenced by site characteristics and how long snow persists. Short-turf Snowpatch tends to occur on the lee side of low ridges where snow accumulates on moderate slopes of sheltered aspect and remains for one to two months longer than on adjoining areas. This type is widely distributed across the Bogong High Plains on basaltic and metamorphic parent material. Diuturnal Snowpatch is restricted to the lee side of the highest ridges and large concave sheltered slopes. At these sites snowmelt is typically not complete until midsummer; very few species are capable of existing at sites with such short growing seasons.

### **Butterfly Community No. 1**

Butterfly Community No.1 is a community characterized by the presence of several species of butterfly. The most important of these are the Small Ant-blue (*Acrodipsas myrmecophii*) and the Large Ant-blue (*Acrodipsas brisbanensis cyrilus*) but the list also includes other species, such as the Southern Purple (Genoveva) Azure (*Ogyris genoveva araxes*), Northern Dusky Blue (*Candalides hyacinthus simplex*) and Miskin's or Wattle Blue (*Theclines miskini miskini*), together with the ant *Iridomyrex nitidus* on which the ant-blues depend. Several of these species, including both ant-blues, are rare throughout their species' range. The ant-blues are known from only one locality in Victoria, and are listed as threatened taxa under the *FFG Act*. The Miskin's or Wattle Blue is not common in Victoria, though more abundant through its wider range.

Characteristic vegetation is a mosaic of dry open forest and woodland of eucalypts, such as Broad-leaved Peppermint (*Eucalyptus dives*), Long-leaved Box (*E. goniocalyx*), Messmate (*E. obliqua*) and Red Stringybark (*E. macrorhyncha*) with an understorey with both grasses and shrubs. Typical understorey species are *Poa* grasses, Rock-ferns (*Cheilanthes* spp.), Common Heath (*Epacris impressa*), Groundsels (*Senecio* spp.) and Mountain Grevillea (*Grevillea alpina*). The main food plants on which these butterflies lay their eggs are tree lichens, rock lichens and fungi.

Butterfly Community No.1 is currently known only from Mt Piper, a solitary conical hill that rises 230-456 m above a plain between the Tallarook and Mt William ranges in north-central Victoria.

### ***Caltha introloba* Herbland Community**

A *Caltha introloba* Herbland Community is a very open herbland dominated by either Alpine Marsh Marigold (*Caltha introloba*) or Dwarf Cushion Sedge (*Oreobolus pumilio* = *Oreobolus pumilio* subsp. *pumilio*). The community is characterized by having very little vegetation cover, typically less than 30%, and by occurring as relatively small patches between 250 and 1000 m<sup>2</sup>. Dwarf Cushion Sedge can form distinctive cushions that progressively die from the centre outwards, creating 'fairy rings'. Hummocks of *Sphagnum* moss are often found at the borders of

the community, which grades into moss bed downhill and *Epacris glacialis* heathland or one of the snowpatch communities uphill. Rare species are often associated with the community and include species such as *Craspedia* sp. A Thompson (1981) = *Craspedia alba*, *Deschampsia caespitose* = *Deschampsia caespitosa*, *Deyeuxia affinis*, *Epacris glacialis*, *Erythranthera australis* = *Rytidosperma australe*, *Juncus antarcticus* = *Juncus antarcticus*, *Parantennaria uniceps* = *Parantennaria uniceps*, and *Utricularia monanthos*. Many of these rare species are restricted to the Bogong High Plains.

This community occupies a very specialised and localised type of habitat. It mainly occurs on flat rocky outwashes of some snowpatch communities in the sub-alpine zone, but has also been recorded within steep snowpatches in the alpine zone above 1800m ASL. The openness of the community is maintained by the continuous and abundant flow of water from the snowpatch during the spring/summer thaw. In Victoria this community is known only from the Bogong High Plains.

### **Central Gippsland Plains Grassland Community**

The Central Gippsland Grassland Community is dominated by Kangaroo Grass (*Themeda triandra*) and includes a range of native herbs including Golden Weather-glass (*Hypoxis hygrometrica*), Common Everlasting (*Helichrysum apiculatum* = *Chrysocephalum apiculatum*, *Chrysocephalum vitellinum* and *Chrysocephalum* sp. 1), Yellow Rush-lily (*Tricoryne elatior*) and Common Rice-flower (*Pimelea humilis*). Trees are rare although, in some places, there are thickets of Drooping She-oak (*Allocasuarina verticillata*), Burgan (*Kunzea ericoides*) and saplings of Forest Red Gum (*Eucalyptus tereticornis*).

The community is extremely restricted in distribution; it is estimated that less than 20 to 30 ha remain. Remnants are currently known only from small areas along the Melbourne to Bairnsdale rail-line, on the disused Heyfield to Maffra rail-line and in a few local Gippsland cemeteries (e.g. Briagolong, Toongabbie and Rosedale). Degraded remnants also occur along a few roadsides east of Toongabbie.

### **Coastal Moonah (*Melaleuca lanceolata* subsp. *lanceolata*) Woodland Community**

The Coastal Moonah Woodland Community is open grassy woodland that is dominated by Moonah (*Melaleuca lanceolata* ssp. *lanceolata* = *Melaleuca lanceolata*) and found along parts of the Victorian coastline.

Commonly associated species are Wirilda (*Acacia retinodes* var. *uncifolia* = *Acacia uncifolia*), Coast Swainson-pea (*Swainsona lessertiifolia*), Thyme Rice-Flower (*Pimelea serpyllifolia* = *P. serpyllifolia* subsp. *serpyllifolia*), Coast Tea-tree (*Leptospermum laevigatum*), Coast Beard-heath (*Leucopogon parviflorus*) and Kidney-weed (*Dichondra repens*). Other associated species include various grasses and sedges.

Coastal Moonah Woodlands tend to occur on high-level dunes along the coast where soils are strongly alkaline and developed on moderately organic aeolian sands or on dune calcarenites. The community has a scattered distribution between Phillip Island and Lorne, with disjunct occurrences west of Portland. (The Moonah-dominated communities of north-central and

north-western Victoria, although dominated by that species, are floristically distinct from Coastal Moonah Woodland.)

### **Cool Temperate Mixed Forest Community**

Cool Temperate Mixed Forest is a structurally complex forest that has an upper canopy of eucalypts above an understorey layer of smaller trees of species that characterise Cool Temperate Rainforest communities. Its main tree species alter from east to west across Victoria. In the east the rainforest species include Black Oliveberry (*Elaeocarpus holopetalus*) and Southern Sassafras (*Atherosperma moschatum*). To the west their composition changes: Black Oliveberry is found in East Gippsland only, Southern Sassafras extends from East Gippsland to the Central Highlands and Myrtle Beech (*Nothofagus cunninghamii*) from the Central Highlands to the Otway Ranges. Blackwood (*Acacia melanoxylon*) may occur in all localities. A similar pattern is seen in the eucalypt species, with Cut-tail Ash or Brown-barrel (*E. fastigata*) only in East Gippsland, Errinundra Shining Gum (*Eucalyptus denticulata*), Shining Gum (*E. nitens*) and Tingaringy Gum (*Eucalyptus glaucescens*) from East Gippsland to the Central Highlands, and Mountain Ash (*E. regnans*) from Gippsland to the Otway Ranges. Other acacias such as Silver Wattle (*Acacia dealbata*) may also be present. Characteristic ground and epiphytic plants include Mountain Pepper (*Tasmannia lanceolata*), Tall Sedge (*Carex appressa*) and a variety of ferns such as Soft Tree-fern (*Dicksonia antarctica*), filmy-ferns (*Hymenophyllum* spp.), water-ferns (*Blechnum* spp.) and Kangaroo Fern (*Microsorium pustulatum*), together with abundant bryophytes and lichens. The deeply-shaded forest floor usually has insufficient light to allow eucalypt regeneration.

Given sufficient time, and if bushfires do not intervene, the eucalypts of the overstorey gradually senesce and die and the community as a whole develops into Cool Temperate Rainforest (*q.v.*). Cool Temperate Mixed Forest can therefore be regarded as a seral or successional stage of Cool Temperate Rainforest that typically develops after rainforest experiences severe fire damage and persists until the community reaches a climax phase.

Cool Temperate Mixed Forest (CTMF) has a very limited distribution within Victoria. It occurs in parts of the Central Highlands, the Toorong Plateau of north Gippsland and the East Gippsland uplands (e.g Errinundra Plateau), largely at montane elevations (900–1200 metres), often in saddles on mountain plateaus and on cool, permanently moist valley sides, and in gullies. CTMF also occurs in the Otway Ranges and probably in the Strzeleckis. It frequently occurs immediately adjacent to Cool Temperate Rainforest, particularly in the Central Highlands where, commonly but not exclusively, ribbons of CTMF occur on either side of the narrow strips of rainforest along gully bases. The need for sufficiently moist conditions for its rainforest component coupled with the drier soils required for eucalypt establishment means that CTMF is often distributed between permanently waterlogged ground near streams and ground that dries out in summer/autumn, thus setting the boundary conditions for the lower and upper edges of the CTMF ribbons.

## **Cool Temperate Rainforest Community**

Rainforest is defined ecologically as forest vegetation with a more-or-less continuous rainforest tree canopy of variable height, and a characteristic diversity of other plant species and life forms.

Cool Temperate Rainforest is dominated by combinations of Myrtle Beech (*Nothofagus cunninghamii*), Southern Sassafras (*Atherosperma moschatum* = *A. moschatum* subsp. *moschatum*), Black Olive-berry (*Elaeocarpus holopetalus*) and Blackwood (*Acacia melanoxylon*) according to the site, the dominant tree species varying with the longitude. Cool Temperate Rainforest includes closed transitional and seral communities, with emergent eucalypts, that are similar in botanical composition to mature rainforests in which eucalypts are absent. In these situations a more or less closed rainforest canopy occurs beneath the emergent eucalypts. The understorey is typically dominated by Musk Daisy-bush (*Olearia argophylla*), Austral Mulberry (*Hedycarya angustifolia*) and tree-ferns, with a ground stratum dominated by ferns. Epiphytes are abundant on both trees and tree-ferns, and a rich bryophyte flora is also present. In undisturbed conditions, Cool Temperate Rainforest has a closed canopy.

Cool Temperate Rainforest occurs in the Otway and Strzelecki ranges, Central Highlands and East Gippsland. It often occurs along the margins of streams or forms more extensive stands where it has been undisturbed and protected from fire.

## **Creekline Grassy Woodland (Goldfields) Community**

The Creekline Grassy Woodland (Goldfields) Community occurs as small remnants within the box-ironbark ecosystems of Victoria.

Two sub-communities have been identified. Both have River Red Gum (*Eucalyptus camaldulensis*) forming open overstorey canopy, often with larger old trees. Groundcover is a dense layer of grasses and sedges including Weeping Grass (*Microlaena stipoides* = *M. stipoides* var. *stipoides*), Tall Sedge (*Carex appressa*), rushes (*Juncus* spp.), Wirilda (*Acacia retinodes* = *Acacia provincialis*), Black Wattle (*Acacia mearnsii*), and Rough-barked Honey-myrtle (*Melaleuca parvistaminea*). Broome (*Bromus* spp.), Quaking-grass (*Briza* spp.) and Fescue (*Vulpia* spp.) are commonly-present weed species. Yellow Box (*Eucalyptus melliodora*) and Grey Box (*E. microcarpa*) occur in one of the sub-communities, whereas the other has a characteristic understorey dominated by Common Tussock-grass (*Poa labillardierei* = *P. labillardierei* var. *labillardierei*) and Kangaroo Grass (*Themeda triandra*).

The community occurs as a woodland interface between the undulating sedimentary rises and the geologically younger alluvial plains. It fringes shallow or ephemeral drainage lines on the lower slopes of box-ironbark forests, but is distinct from the riparian vegetation found along permanently flowing streams on the alluvial plains.

## **Devonian Limestone Pomaderris Shrubland Community**

Structurally, the Devonian Limestone Pomaderris Shrubland Community is a low closed shrubland with the dominant shrubs including Limestone Pomaderris (*Pomaderris oraria* subsp.

*callicola*), which is most common, Sticky Hop-bush (*Dodonea viscosa* subsp. *angustifolia*) and Tree Violet (*Hymenanthera dentata* = *Melicytus dentatus*). There are occasional small emergent trees such as Limestone Blue Wattle (*Acacia caerulescens*), Lightwood (*Acacia implexa*), Drooping She-oak (*Allocasuarina verticillata*), Kurrajong (*Brachychiton populneus* = *B. populneus* subsp. *populneus*) and Sweet Pittosporum (*Pittosporum undulatum*) and a diverse herb layer with the most abundant species including: Short-stem Sedge (*Carex breviculmis*), Barb-wire Grass (*Cymbopogon refractus*), Black-fruit Saw-sedge (*Gahnia melanocarpa*), Variable Sword-sedge (*Lepidosperma laterale*), Long-leaved Wallaby Grass (*Danthonia longifolia* = *Rytidosperma longifolia*), Common Wheat-grass (*Elymus scaber* = *E. scaber* var. *scaber*) and Kangaroo Grass (*Themeda australis* = *Themeda triandra*).

Forbs in this community are diverse. The most ubiquitous native species are Kidney Weed (*Dichondra repens*), Bedstraw (*Galium migrans*), Austral Tobacco (*Nicotiana suaveolens*) and Grassland Wood-sorrel (*Oxalis perennans*), together with the rock specialists Cockspur Flower (*Plectranthus parviflorus*), Rough Fireweed (*Senecio hispidulus* subsp. *dissectus* = *Senecio bathurstianus*) and Forest Nightshade (*Solanum prinophyllum*).

This community is a highly restricted component of the Karst landscape of the Buchan-Murrindal district in east Gippsland. It appears to be confined to dry situations associated with steep limestone areas on the crests of cliffs and the basal scree that develop in conjunction with streams. Only three stands are known: from public land at the Anticline and the Pyramids (Caves Reserves) and the Snowy River National Park at Jacksons Crossing, as well as a few sites on private land on cliffs associated with the Buchan and Murrindal River valleys. It is estimated that less than 20 ha of the community currently exists.

The unstable nature of the soils on which the community occurs predisposes it to serious and ongoing weed invasion. A lack of knowledge regarding appropriate fire regimes may lead to changes in community structure and composition, which include weed invasion and, in some cases, a conversion to Dry Rainforest.

### **Dry Rainforest (Limestone) Community**

The Dry Rainforest (Limestone Community) is universally characterized by a continuous closed canopy of Sweet Pittosporum (*Pittosporum undulatum*) with occasional individuals of Drooping Sheoak (*Allocasuarina verticillata*) with or without emergent Kurrajong (*Brachychiton populneus* = *B. populneus* subsp. *populneus*).

Muttonwood (*Rapanea howittiana*) is often present, even as a canopy species, while Lightwood (*Acacia implexa*) is also capable of population maintenance by root suckering in the absence of fire. Less commonly Black Wattle (*Acacia mearnsii*) and occasionally the bird-dispersed Common Boobialla (*Myoporum insulare*) have been noted in these stands. A canopy vine flora is not always well-developed structurally, although Staff Climber (*Celastrus australis*) and Milk-vine (*Marsdenia rostrata*) and, less commonly, Wonga Vine (*Pandorea pandorana*) and Mountain Clematis (*Clematis aristata*) may be present. The sub-canopy vine flora is dominated by Wombat Berry (*Eustrephus latifolius*), Scrambling Lily (*Geitonoplesium cymosum*) and Austral Sarsaparilla (*Smilax australis*). The understorey is typically very open, with a few scattered spiny bushes such as Prickly Currant-bush (*Coprosma quadrifida*) the only regular

sub-canopy species. Eastern Nightshade (*Solanum pungetium*) and Tree Violet (*Hymenanthera dentata*) are usually present but most often restricted to the margins of the stands. Significantly, there are often scattered individuals of Limestone Pomaderris (*Pomaderris oraria* ssp. *calcicola*).

The fern flora is represented mainly by lithophyte species such as Common Spleenwort (*Asplenium trichomanes* subsp. *quadrivalens*), Green Rock Fern (*Cheilanthes austrotenuifolia*), Bristly Cloak-fern (*C. distans*), Narrow Rock Fern (*C. sieberi* subsp. *sieberi*), Blanket Fern (*Pleurosorus rutifolius*) and Chinese Brake (*Pteris vittata*). The other abundant ferns are the drought-tolerant species usually expected of this type of vegetation, with Sickie Fern (*Pellaea falcate*), Tender Brake (*Pteris tremula*) and the Necklace Fern (*Asplenium flabellifolium*) being the most common. Tree ferns and other moisture-dependent fern taxa are consistently absent. Herbs and grasses can be particularly abundant. Both may be quite diverse on Devonian Limestone, but much less so on Tertiary Limestones. The majority of grasses found in this community are not found in Dry Rainforest (Gorges) Community. Unless otherwise indicated, these species consistently occur beneath the canopy, and include Barb-wire Grass (*Cymbopogon refractus*; gaps only), Weeping Grass (*Microlaena stipoides* = *M. stipoides* var. *stipoides*), Grey Tussock-grass (*Poa sieberiana*; mostly gaps), Common Wheat-grass (*Elymus scaber*), Kangaroo Grass (*Themeda triandra*; gaps only) and the highly shade-tolerant species Feathery Wheat-grass (*Australopyrum retrofractum*). Long-leaf Wallaby-grass (*Notodanthonia longifolia*) is the only species consistently and commonly found in both Dry Rainforest floristic communities. The common herbs in the Dry Rainforest (Limestone) Community are also drought-tolerant species. Those found primarily in gaps are Austral Tobacco (*Nicotiana suaveolens*; Devonian Limestones), Australian Stonecrop (*Crassula sieberiana*), Australian Hound's-tongue (*Cynoglossum australe*). Beneath the canopy, where shade tolerance is needed, species such as Kidney-weed (*Dichondra repens*), Saloop Saltbush (*Einadia hastata*), Nodding Saltbush (*E. nutans*), Cockspur Flower (*Plectranthus parviflorus*), Shade Pellitory (*Parietaria debilis*) and Scrub Nettle (*Urtica incisa*) are found. The Dry Rainforest (Limestone) Community also has a complement of graminoids other than grasses: this regularly includes Short-stem Sedge (*Carex breviculmis*) and Black-fruit Saw-sedge (*Gahnia melanocarpa*), with the sedge-like drought-tolerant Black-anther Flax-lily (*Dianella revoluta*) also common. No vascular epiphytes have been recorded from this community.

Dry Rainforests are limited to the most fireproof sites, such as deep rocky gorges, cliff bases and elevated scree slopes, in isolated rain-shadowed valleys in the foothills of East Gippsland where there is a pronounced and extended hot, dry, summer season. The community grows exclusively on the limestone riverine cliffs, on colluvial rock screes which collect at the bases of these cliffs, in collapsed caves (dolines) and on the shores of lakes where this geology is also exposed, at altitudes from sea level to 240 m. Structurally, many stands of the Dry Rainforest (Limestone) Community are based around several very old emergent kurrajong trees, although sites on Tertiary Limestone generally lack this species.

## **Fen (Bog Pool) Community**

The Fen (Bog Pool) Community is considered interdependent with the Alpine Bog Community. It is characterized by a suite of taxa that establish in pools of standing water within the boggy moss bed of the Alpine Bog Community. The fen community tends to be dominated by sedges (due to presence of surface water) and therefore is structurally different from the Alpine Bog Communities, which are typically dominated by *Sphagnum*. The characteristic species are the Fen Sedge or Tufted Sedge (*Carex gaudichaudiana*), Mat Water-milfoil (*Myriophyllum pedunculatum* = *M. pedunculatum* subsp. *pedunculatum*), Dwarf Buttercup (*Ranunculus millanii*) and Mud Pratia (*Pratia surrepens* = *Lobelia surrepens*). The pools usually have permanent water though, at the end of a dry summer, the free water may disappear while the peaty soil remains very damp.

The following additional species may be found in the fens, though not necessarily always: Baw Baw Daisy (*Brachyscome obovata*), Tufted Hairgrass (*Deschampsia caespitosa*), Willow Herb (*Epilobium gunnianum*), Bog Carraway (*Oreomyrrhis ciliata* = *Chaerophyllum australianum*), Star Sedge (*Carex echinata*), Broad-leaf Flower-rush (*Carpha nivicola*), Spreading Rope Rush (*Empodisma minus*), Alpine Clusledge (*Isolepis crassiuscula*), Sickle Leaf Rush (*Juncus falcatus*), and Sphagnum Moss species (*Sphagnum cristatum* and *Sphagnum novozelandicum*).

Fen (Bog Pool) Community occurs where there are semi-permanent to permanent pools of water along the wettest sections of watercourses and on flatter areas of valley floors, where they are sustained through groundwater discharge. This community is represented in Victoria by a small number of fragmented and isolated remnants scattered across the Australian Alps in alpine, subalpine and montane environments, typically above the climatic tree-line (at or above 1200 m ASL). The community may also occur at lower altitudes in areas known as 'frost hollows' that limit the establishment of trees within the community. The rarity of this community may be a reflection of the comparative scarcity of near-permanent pools in the alpine environment.

## **Forest Red Gum Grassy Woodland Community**

The Forest Red Gum Grassy Woodland Community is a type of woodland found at a number of sites in Gippsland. The community is characteristically dominated by Forest Red Gum (*Eucalyptus tereticornis* = *E. tereticornis* subsp. *mediana*), often with co-dominant Red Box (*E. polyanthemos*). Coast Grey Box (*E. bosistoana*) occurs towards the coast, while Apple Box or But-But (*E. bridgesiana*) is often co-dominant on sandy sites. Beneath the eucalypts, there are often scattered small trees of Lightwood (*Acacia implexa*), and groves of Black She-oak (*Allocasuarina littoralis*) in some places.

The herbaceous understorey is co-dominated by a variety of species. Dominant grasses include Weeping Grass (*Microlaena stipoides* = *M. stipoides* var. *stipoides*) and Wallaby Grass (*Danthonia racemosa* = *Rytidosperma racemosum*), often with Kangaroo grass (*Themeda triandra*) and/or Veined Spear Grass (*Stipa rudis* = *Austrostipa rudis* subsp. *rudis*). Thatch Saw Sedge (*Gahnia radula*) is abundant on some sites. Dominant forbs include Kidney-weed (*Dichondra repens*) and Stinking Pennywort (*Hydrocotyle laxiflora*), together with an array of perennial and annual plant species.



This community occurs primarily on public land on a small number of sites between 5 and 400 ha in area (approximately 650-700 ha in total), not all of which are managed primarily for conservation purposes. Intact remnants occur within the Moormung Flora and Fauna Reserve near Bairnsdale, Providence Ponds Flora and Fauna Reserve, the Knob Recreation Reserve near Stratford, Stratford Highway Park, Briagolong Forest Reserve, and the Blond Bay Wildlife Reserve at Lake Victoria. Smaller remnants, many of which are quite degraded, exist in other streamside and bushland reserves.

### **Granite Foothills Spring Wetland (North-east Victoria) Community**

The Granite Foothills Spring Wetland (North-East Victoria) Community is a type of community that develops in scattered sites on soaks and along drainage lines from soaks on the lower slopes of granite foothills in north-eastern Victoria, chiefly in and around the Warby Ranges and the Chiltern-Mt. Pilot Parks. The groundwater that feeds these wetlands emerges seasonally, normally during the spring months, from aquifers through the fragmented granite base rock of the hills, usually waterlogging the soil for several months extending into summer. Since European settlement most of these sites have been used by landholders as water sources for stock, often with concomitant vegetation clearing and the construction of dams and stock channels; commonly relatively little of the original community remains, and weed infestation is common.

The composition of the spring wetland community reflects its disturbance history, with relatively few sites being in good condition. Where intact vegetation remains or has redeveloped, this is typically structured into zones that radiate outwards around the source of moisture. In low disturbance sites, the wetter centre commonly supports many species of sedges and rushes, surrounded by a shrubby woodland at the outer edge of which is a low herbland up to the edge of the waterlogged zone.

The central zone is often dominated by species of rush (*Juncus*). In the woodland zone the overstorey trees, where they remain, are commonly Warby Swamp Gum (*Eucalyptus cadens*), Blakely's Red Gum (*E. blakelyi*) or, occasionally, Long-leaf Box (*E. goniocalyx/nortonii*). At the more intact sites the shrub layer often contains Prickly Tea-tree (*Leptospermum continentale*) and (more rarely) Golden Spray (*Viminaria juncea*). The outer herbland is species-rich and may include Fairies Aprons (*Utricularia dichotoma*), Swamp Isotome (*Isotoma fluviatilis* = *Isotoma fluviatilis* subsp. *australis*), Matted St John's Wort (*Hypericum japonicum*), Small Mud-mat (*Glossostigma elatinoides*), Pale Sundew (*Drosera peltata* subsp. *peltata*), Common Bog-sedge (*Schoenus apogon*) and Slender Aphelia (*Aphelia gracilis*). Several threatened species listed under the *Flora and Fauna Guarantee Act* may occur in this community, including the Warby Swamp Gum, Narrow Goodenia (*Goodenia macbarronii*), Purple Diuris Orchid (*Diuris punctata*) and the Rugose Toadlet (*Uperoleia rugosa*). The proportion of annual weeds such as Cat's Ear (*Hypochoeris radicata* = *Hypochoeris radicata*) and Lesser Quaking-grass (*Briza minor*) in the community can indicate the amount of past disturbance.

## **Grey Box - Buloke Grassy Woodland Community**

The Grey Box - Buloke Grassy Woodland Community is a mainly grassy woodland found on flat or very gently undulating plains in northern Victoria and a few places in central Victoria. It tends to develop in the absence of fire on sites with relatively fertile, fine-grained soils.

Grey Box (*Eucalyptus microcarpa*) is usually the structurally dominant tree over a lower stratum of Buloke (*Allocasuarina luehmannii*). Where fire is absent over a very long period, buloke may become the dominant species. The ground layer is mainly grasses such as Bristly Wallaby-grass (*Danthonia setacea* = *Rytidosperma setaceum*), Squirrel-tail Fescue (*Vulpia bromoides*), Soft Brome (*Bromus hordeaceus* = *B. hordeaceus*), Windmill-grass (*Chloris truncata*), Common Wheat-grass (*Elymus scaber* = *E. scaber* var. *scaber*), occasionally Kangaroo Grass (*Themeda triandra*) and (rarely) Tussock-grass (*Poa sieberiana*). Although a shrub layer is usually lacking, a scattering of wattles is present at some sites, including Deane's Wattle (*Acacia deanei*), Gold-dust Wattle (*A. acinacea*) and Golden Wattle (*A. pycnantha*) and a few other shrubs such as Drooping Cassinia or 'Chinese Scrub' (*Cassinia arcuata*).

## **Herb-rich Plains Grassy Wetland (West Gippsland) Community**

The Herb-rich Plains Grassy (West Gippsland) Community typically occurs in shallow (less than 50 cm deep) seasonal wetlands that fill in winter and spring and are dry by summer. Some may retain water for longer periods, but typically only have surface water for up to six months. The community contains a rich plant association of grasses, sedges and aquatic herbs.

This community is characterized by a strong zonation pattern from emergent sedges, grasses and amphibious herbs in the fringing/littoral zone, through to deeper water dominated by submergent species together with a few sedges. Species typical of the fringing zone, and subject to shallow inundation, include Common Tussock-grass (*Poa labillardierei* = *P. labillardierei* var. *labillardierei*) and/or Soft Twig Sedge (*Baumea arthropphylla*), and Common Spike-sedge (*Eleocharis acuta*), in association with Brown-back (*Danthonia duttoniana* = *Rytidosperma duttonianum*) and Wetland Wallaby-grass (*D. semiannularis* = *Rytidosperma semiannulare*). Other sedges, including Basket Sedge (*Carex tereticaulis*), or Fen Sedge (*C. gaudichaudiana*) may be locally abundant. This zone also supports a suite of other species including Joint-leaf Rush (*Juncus holoschoenus*), Running Marsh-flower (*Villarsia reniformis*), Prickfoot (*Eryngium vesiculosum*), Floating Club-sedge (*Isolepis fluitans*), Small Loosestrife (*Lythrum hyssopifolia*), Poison Lobelia (*Lobelia pratoides*) and Small Spike-sedge (*Eleocharis pusilla*). In ungrazed or infrequently grazed situations, this fringing zone may include Swamp Everlasting (*Bracteantha* sp. aff. *subundulata*), Pale Swamp Everlasting (*Helichrysum* aff. *rutidolepis* = *Coronidium* aff. *scorpioides* (Lowland Swamps), Milky Beauty Heads (*Calocephalus lacteus*), Billy Buttons (*Craspedia canens*), and Swamp Daisy (*Brachyscome cardiocarpa*). The central zone, when inundated, is dominated by Common Spike Sedge (*Eleocharis acuta*) in association with Australian Sweet Grass (*Glyceria australis*) and/or Veined Swamp Wallaby-grass (*Amphibromus nervosus*). Other plants that may be abundant in this zone include Water Purslane (*Neopaxia australasica*), Running Marsh-flower (*Villarsia reniformis*), Soft Twig-sedge (*Baumea arthropphylla*), Soft Bog-sedge (*Schoenus tesquorum*), Floating Pondweed (*Potamogeton tricarinatus* = *Potamogeton cheesemanii*), Water Ribbons (*Triglochin procerum*

spp. agg.), River Buttercup (*Ranunculus inundatus*) and Water-milfoil (*Myriophyllum* spp). If present, emergent trees of River Red Gum (*Eucalyptus camaldulensis*) or Swamp Gum (*E. ovata*) may be scattered throughout the wetland or on higher ground fringing the wetland. Shrubs, where present, tend to be sparse and only on the fringe of the community. These may include Blackwood (*Acacia melanoxylon*), Golden Spray (*Viminaria juncea*), Swamp Paperbark (*Melaleuca ericifolia*) and Prickly Tea-tree (*Leptospermum continentale*).

It is estimated that less than 70 ha of this community still exists, including degraded areas. Remnants occur at Barnbam Swamp at Lyndhurst, along the fringe of the former Carrum Carrum Swamp, on private land at Braeside Park, and along rail reserves between Dandenong and Cranbourne, Dandenong and Berwick, and Clyde and Tooradin. Remnants of this community continue to be under pressure from ongoing urban development in the eastern and south-eastern growth corridors of Melbourne.

### **Limestone Grassy Woodland Community**

The Limestone Grassy Woodland Community is a somewhat variable eucalypt woodland that occurs on sites with moderate fertility on undulating hills, largely on limestone-derived soils. The vegetation structure varies from open woodland to open forest over a diverse ground layer of grasses and herbs.

The most common trees are Manna Gum (*Eucalyptus viminalis* = *E. viminalis* subsp. *viminalis*) and Yellow Box (*Eucalyptus melliodora*) with other species including Snow Gum (*Eucalyptus pauciflora*). There are occasional individuals of Kurrajong (*Brachychiton populneus* = *Brachychiton populneus* subsp. *populneus*) and the nationally-vulnerable East Gippsland endemic, Limestone Blue Wattle (*Acacia caerulescens*). The understorey is characterized by a tall shrub layer of low diversity that typically includes such species as Blackwood (*Acacia melanoxylon*), Lightwood (*A. implexa*), Limestone Blue Wattle (*A. caerulescens*), Tree Violet (*Hymenanthera dentata* = *Melicytus dentatus*), Sweet Bursaria (*Bursaria spinosa* = *Bursaria spinosa* subsp. *spinosa*) and Drooping Sheoak (*Allocasuarina verticillata*). Herbs are the most abundant and structurally obvious life-forms in this community. The ground layer is dominated by grasses, with Kangaroo Grass (*Themeda triandra*) the most common. Other grasses present may include Red-leg Grass (*Bothriochloa macra*), Common Tussock-grass (*Poa labillardierei* = *P. labillardierei* var. *labillardierei*), Soft Tussock-grass (*P. morrisii*) and Blady Grass (*Imperata cylindrica*). A variety of herbs is commonly present, including Cinquefoil Cranesbill (*Geranium potentilloides* = *G. potentilloides* var. *potentilloides*), Bidgee-widgee (*Acaena novae-zelandiae*), Sheep's Burr (*Acaena echinata*), Hairy Solenogyne (*Solenogyne gunnii*), Small-leaf Bramble (*Rubus parvifolius*), Kidney Weed (*Dichondra repens*), Grassland Wood-sorrel (*Oxalis perennans*) and Maori Bedstraw (*Galium propinquum* = *Galium leiocarpum*).

Once widespread and locally extensive, this community now appears to be restricted to the limestone areas of the Buchan and Murrindal River valleys, which are largely cleared for agriculture with the community remnants usually being heavily grazed.

## **Limestone Pomaderris Shrubland Community**

The Limestone Pomaderris Shrubland Community is a low, dense, closed shrubland occurring on steep slopes on marble-derived soils in East Gippsland. It is characterized by a unique assemblage of plants. The community is dominated by the relatively rare Limestone Pomaderris (*Pomaderris oraria* subsp. *calcicola*) and Silver Bundy (*Eucalyptus nortonii*), together with Drooping She-oak (*Allocasuarina verticillata*). Other rare species include Marble Daisy-bush (*Olearia astroloba*), Winged Everlasting (*Helichrysum adnatum* = *Ozothamnus adnatus*) and Dense Bush-pea (*Pultenaea densifolia*).

This community has been recorded from only one part of Victoria: an area of about 40 ha at Marble Gully near 'Bindi' in east Gippsland and is associated with its limestone geology. The available habitat for this community is extremely limited, being on public land because of land clearance, and with this geology. It occurs on steep slopes (>30°) with a north to north-westerly aspect at an altitude of about 600 m ASL, often in close proximity to Dry Rainforest. Sites have light reddish, skeletal soils. The community appears to require extended periods without fire.

## **Lowland Riverine Fish Community of the Southern Murray-Darling Basin**

The Lowland Riverine Fish Community of the southern Murray-Darling Basin is characteristic of the geographical area that defines its distribution, and by a selected suite of native fish taxa that is typical of and largely restricted to the area.

The geographical area that delineates this fish assemblage can be broadly defined as the lowland river reaches and associated floodplains of the Murray River tributaries in Victoria that drain the northern slopes of the Great Dividing Range, together with the lowland section and floodplain of the Murray River upstream of the South Australian border. The major streams involved are: the Mitta Mitta, Ovens, Broken, Goulburn, Campaspe, Loddon and Avoca Rivers. Whilst this community mainly occurs in the lowland river reaches, some species may also occur (at least at certain times) in both the slope and upland river reaches.

The fish fauna is predominantly characterized by the following native fish species: Agassiz's Chanda Perch (*Ambassis agassizii*), Silver Perch (*Bidyanus bidyanus*), Murray Hardyhead (*Craterocephalus fluviatilis*), Non-specked Hardyhead (*Craterocephalus stercusmuscarum fulvus*), Flat-headed Galaxias (*Galaxias rostratus*), Western Carp Gudgeons (*Hypseleotris klunzingeri*, now considered to be a species complex), Trout Cod (*Maccullochella macquariensis*), Murray Cod (*Maccullochella peelii*, previously *Maccullochella peelii peelii*), Golden Perch (*Macquaria ambigua*), Macquarie Perch (*Macquaria australasica*), Murray Rainbow Fish (*Melanotaenia fluviatilis*), Southern Purple-spotted Gudgeon (*Mogurnda adspersa*), Bony Bream (*Nematalosa erebi*), Flat-headed Gudgeon (*Philypnodon grandiceps*) and Freshwater Catfish (*Tandanus tandanus*). Other widespread or uncommon species may also occur over parts of the distribution of this community: Southern Pigmy Perch (*Nannoperca australis*), River Blackfish (*Gadopsis marmoratus*), Two-spined Blackfish (*Gadopsis bispinosus*), Australian Smelt (*Retropinna semoni*), Short-headed Lamprey (*Mordacia mordax*), Short-finned Eel (*Anguilla australis*), Broad-finned Galaxias (*Galaxias brevipinnis*) and Barred Galaxias (*Galaxias fuscus*).

Many of these constituent species have undergone significant reductions in range and abundance since European settlement. There have been considerable changes to habitats throughout the distribution of this community, caused by a range of factors, and the introduction of alien fish species within the range of the community, such as Brown Trout (*Salmo trutta*), Rainbow Trout (*Oncorhynchus mykiss*), Carp (*Cyprinus carpio*), Goldfish (*Carassius auratus*), Tench (*Tinca tinca*), Oriental Weatherloach (*Misgurnus anguillicaudatus*), Eastern Gambusia (*Gambusia holbrooki*) and Redfin Perch (*Perca fluviatilis*).

### **Montane Swamp Community**

The Montane Swamp Complex is a mosaic of usually treeless, drainage-line vegetation, with a large number of herbaceous species, and characteristically found on sites subject to appreciable cold air drainage.

The dominant shrub is Mountain Baeckea (*Baeckea utilis*). Other important species are Fen Sedge (*Carex gaudichaudiana*), Slender Twig-rush (*Baumea gunnii*), Graceful Fescue (*Festuca asperula*), Spreading Rope-rush (*Empodisma minus*), Tussock-grass (*Poa costiniana*), Alpine Water-fern (*Blechnum penna-marina* = *B. penna-marina* subsp. *alpina*), and Sphagnum Moss (*Sphagnum cristatum*). The Montane Swamp Community may be co-dominated by Myrtle Teatree (*Leptospermum myrtifolium*), with an understorey of heathy shrubs dominated by Coral Heath (*Epacris microphylla* = *E. microphylla* var. *microphylla*), Drumstick Heath (*E. breviflora*) and Small-fruit Hakea (*Hakea microcarpa*). The ground cover contains a diversity of sedges, grasses, forbs and ferns including Common Bog-sedge (*Schoenus apogon*), Slender Twig-sedge (*Baloskion australe*), Tall Sedge (*Carex appressa*), Mountain Club-sedge (*Isolepis subtilissima*), Rush (*Juncus* spp.) and Mountain Woodruff (*Asperula gunnii*). On drier sites, eucalypts including Snow Gum (*Eucalyptus pauciflora* = *E. pauciflora* subsp. *pauciflora*), Black Sallee (*E. stellulata*) and Candlebark (*E. rubida*) are occasionally recorded.

The community is restricted to several tributaries of the western headwaters of the Tambo River east of Benambra in East Gippsland. There were only seven known localities totalling 44 hectares at the time of listing (1988), the largest being 21 ha in area.

### **Northern Plains Grassland Community**

The Northern Plains Grassland Community is restricted to the naturally treeless plains of northern Victoria, and dominated by largely perennial tussocky grasses and an occasional, sparse occurrence of trees or large shrubs.

The community is a tussock grassland dominated by *Danthonia* spp. (including *Danthonia setacea* = *Rytidosperma setaceum* and *D. caespitosa* = *Rytidosperma caespitosum*) and *Stipa* spp. (including *Stipa nodosa* = *Austrostipa nodosa* and *S. gibbosa* = *Austrostipa gibbosa*) and other sub-dominant grasses, together with a variety of shrubs and herbs. The families *Asteraceae* (including *Brachyscome chrysoglossa* and *Vittadinia gracilis*) and *Chenopodiaceae* (including *Atriplex semibaccata*, *Maireana excavata*, *Einadia* spp.) are characteristic. The

community is readily distinguished from other grasslands and grassy woodlands in Victoria by the absence of *Themeda triandra*.

The Northern Plains Grassland Community extends from Echuca in the east to the Patho Plains near the Loddon River in the west. Its soil type and rainfall are probably the two main influences on its floristic composition, although this has been much modified by land-use practices. Soils are heavy and vary from calcareous clay loams to cracking clays that may be inundated for short periods. The higher rainfall regions to the east tend to have greater representation of native perennial grasses while the drier areas to the west tend to be richer in chenopods.

### **Plains Grassland (South Gippsland) Community**

The Plains Grassland (South Gippsland) Community varies in structure from closed tussock grassland to open woodland. Its original vegetation structure is likely to have been an open woodland that included areas of very sparsely-treed tussock grassland with shrubby zones associated with drainage lines.

Grass swards in this community are dominated by Kangaroo Grass (*Themeda triandra*) and Mat Grass (*Hemarthria uncinata* = *Hemarthria uncinata* var. *uncinata*) on drier sites, and Common Tussock Grass (*Poa labillardieri*) on wetter sites. Characteristic species include Common Blown-grass (*Agrostis avenacea* = *Lachnagrostis filiformis*), Smooth Wallaby-grass (*Danthonia laevis* = *Rytidosperma laeve*), Heath Wallaby-grass (*D. semiannularis* = *Rytidosperma semiannulare*), Mat Grass (*Hemarthria uncinata* = *H. uncinata* var. *uncinata*), Finger Rush (*Juncus subsecundus*), Common Bog Sedge (*Schoenus apogon*), Common Tussock-grass (*Poa labillardierei* var. *labillardierei*) and Blown Grass (*Agrostis aemula* = *Lachnagrostis aemula*). Where trees occur they include a sparse cover of Manna Gum (*Eucalyptus viminalis*), Drooping She-oak (*Allocasuarina verticillata*), Blackwood (*Acacia melanoxylon*) and Black Wattle (*A. mearnsii*), while shrub species recorded include Golden Spray (*Viminaria juncea*), Swamp Paperbark (*Melaleuca ericifolia*) and Prickly Tea-tree (*Leptospermum continentale*).

This community type occurs in places on the Gippsland plains between the Yarram region, between Seaspray and Welshpool, on the east and the top of Western Port Bay on the west.

### **Port Phillip Bay Entrance Deep Canyon Marine Community**

This is a highly diverse, varied and complex marine community of reef-dwelling sessile invertebrates, chiefly sponges, ascidians, bryozoans, hydrozoans and corals, with the sponges collectively forming what are often referred to as 'sponge gardens'. The community covers the reef surface at depths below 20-25 m within a steep-sided underwater canyon up to 100 m deep at the entrance to Port Phillip Bay.

The sponge gardens within the community contain over 271 named species of sponge, 115 of which are endemic to the area. This community is also a centre of southern Australian

bryozoan diversity, with a greater number of species represented than in the whole of Europe. It is also one of only three areas in Victoria known to support a highly diverse hydrozoan fauna.

The underwater canyon itself bisects a plateau of limestone (calcarenite) reefs, up to 17 m in depth and 1 km in width, and is the main passageway through the Bay entrance for the twice-daily tidal exchange of water between the oceanic waters of Bass Strait and the approximately 2000 km<sup>2</sup> area of Port Phillip Bay. Water currents of great strength (3-8 knots) are produced; these form what is known as 'The Rip', and lead to a set of marine habitats and conditions that are unique in Victoria and probably Australia.

### **Red Gum Swamp Community No. 1**

The Red Gum Swamp Community No. 1 is a community dominated by River Red Gum (*Eucalyptus camaldulensis*), and distinguished from other communities that include River Red Gum by the presence of seasonal or intermittent surface water up to a depth of 40 cm that can inundate a site for up to four months of the year.

In wetter examples of this community, the ground stratum is typically dominated by Running Marsh-flower (*Villarsia reniformis*), Joint-leaf Rush (*Juncus holoschoenus*), Soft Bog-sedge (*Schoenus tesquorum*) and Common Spike-sedge (*Eleocharis acuta*). Frequent sub-dominants in such areas are: Rush Sedge (*Carex tereticaulis*), Purple Bladderwort (*Utricularia dichotoma*), Prickfoot (*Eryngium vesiculosum*), Rough Raspwort (*Haloragis aspera*), Slender Goodenia (*Goodenia gracilis*), Yellow Rush (*Juncus flavidus*), Small Trigger-plant (*Stylidium despectum*) and Floating Pondweed (*Potamogeton tricarinatus*).

At the edges of this community and in drier examples the vegetation is not usually dense, with individual plants separated by bare soil and/or soil crust. The sparse to mid-dense ground stratum is usually dominated by Common Wallaby-grass (*Danthonia caespitosa*) and Brown-back Wallaby-grass (*Danthonia duttoniana*), along with Blue Devil (*Eryngium ovinum*) and Soft Bog-sedge (*Schoenus tesquorum*), except in gilgais where Veined Swamp Wallaby-grass (*Amphibromus nervosus*) dominates. Frequent sub-dominants include Common Sneezeweed (*Centipeda cunninghamii*), Lemon Beauty-heads (*Calocephalus citreus*), Poison Lobelia (*Lobelia pratoides*), Scaly Buttons (*Leptorhynchos squamatus*) and Paper Sunray (*Helipterum corymbiflorum*).

The distribution of Red Gum Swamp Community No. 1 in Victoria is very localised and likely to have always been restricted. The community is currently known to occur in western parts of the Wimmera Catchment Management Authority (CMA) and Glenelg–Hopkins CMA areas. A number of these sites are on private land. In the past this community may have been somewhat more widespread.

### **Rocky Chenopod Open-Scrub Community**

The Rocky Chenopod Open-Scrub Community may be described as an open-scrub community with a shrubby understorey and a characteristically open ground layer. Soils are generally

skeletal and high in calcium, increasing with depth. Chenopods are abundant. The canopy is formed from stands of frequently stunted and multi-stemmed Bull Mallee (*Eucalyptus behriana*) with Yellow Gum (*E. leucoxylon* = *E. leucoxylon* subsp. *connata*), and/or Grey Box (*E. microcarpa*) and occasional Red Box (*E. polyanthemos*) towards the margins. Box Mistletoe (*Amyema miquellii*) is widespread in the canopy.

Typical examples of the community are dominated by Bull Mallee. The shrubby understorey is predominantly Gold-dust Wattle (*Acacia acinacea*), Golden Wattle (*A. pycnantha*), tall Cassinia species (*Cassinia longifolia* and *C. arcuata*) and shrubby chenopods, notably Fragrant Saltbush (*Rhagodia parabolica*) and Barrier Saltbush (*Enchylaena tomentosa* = *Enchylaena tomentosa* var. *tomentosa*). Small-leaf Clematis (*Clematis microphylla* = *Clematis decipiens*) is found on medium-height and smaller shrubs. The ground layer contains a high proportion of ephemerals and several drought-tolerant perennial dwarf shrubs and herbs, including Inland Pigface (*Carpobrotus modestus*), Saloop Saltbush (*Einadia hastata*), Nodding Saltbush (*Einadia nutans* = *E. nutans* subsp. *nutans*) and species of *Sclerolaena*. Although not a dominant feature of this layer, tussock grasses (notably *Danthonia* spp. = *Rytidosperma* spp., *Poa* spp. and *Stipa* spp. = *Austrostipa* spp.) are scattered throughout. Abundant bryophytes and soil lichens are also present. Rare species associated with this community include Brittle Greenhood (*Pterostylis truncata*), Kidney Saltbush (*Atriplex stipitata*), Fragrant Saltbush (*Rhagodia parabolica*), Spreading Eutaxia (*Eutaxia diffusa* = *E. microphylla* var. *diffusa*), Leafy Templetonia (*Templetonia stenophylla*), Turkey-bush (*Eremophila deserti*) and Cane Spear-grass (*Stipa breviglumis* = *Austrostipa breviglumis*) (rare both in Victoria and nationally).

The community has a very restricted distribution and less than 200 ha may currently exist, all on sites near Melbourne. The largest remnant of about 150 ha occurs in the vicinity of Djerriwarrh and Coimadai Creeks in the Long Forest area to the west of Melton (from which 'Long Forest Mallee Community', its former classification within the National Estate, was derived).

### **San Remo Marine Community**

The San Remo Marine Community is an intertidal and subtidal reef community on a mixed substrate of mud, old basaltic rock and sand, at the south-eastern corner of Western Port. It occurs between the township of San Remo and the edge of the relatively deep eastern tidal channel that connects Western Port with Bass Strait, and runs in a SW-NE direction between Phillip Island and the mainland.

The community is extremely species-rich when compared with relatively impoverished reefs to the east and west. It is characterized by the recording of 93 species of opisthobranch mollusc, of which 21 have yet to be formally described and named. Other species include seagrasses, intertidal algae, and a variety of sponges, bryozoans, molluscs, crabs, echinoderms and fish. Of significance is the relative abundance of the rare bivalve *Anadara trapezia*, once widespread and frequently found in fossil beds and Aboriginal middens, but which has declined markedly in range since European settlement.



The substratum on which this community is found forms roughly a right-angled triangle. Its base is approximately 1.5 km of San Remo foreshore, which has a northerly aspect, unusual in Victoria. It then extends outwards and northwards to the tidal channel for a distance between a few metres at its southwest corner, near the San Remo end of the bridge to Phillip Island, to about 1.2 km from the foreshore at its north-eastern extremity. Currents in the channel become very rapid during rising and falling tides.

### **Sedge-rich *Eucalyptus camphora* Swamp Community**

The Sedge-rich *Eucalyptus camphora* Swamp Community is characterized by a moderate cover canopy (20-50%) of Mountain Swamp Gum (*Eucalyptus camphora* = *E. camphora* subsp. *humeana*), 6-25 m in height, over a shrub layer dominated by Woolly Tea-tree (*Leptospermum lanigerum*) and a ground cover of diverse sedges and rushes.

Ground cover species include Fen Sedge (*Carex gaudichaudiana*), Tassel Sedge (*C. fascicularis*), Tall Sedge (*C. appressa*), Leafy Flat-sedge (*Cyperus lucidus*) and Soft Twig-sedge (*Baumea rubiginosa*), while grasses and herbs include Australian Gipsywort (*Lycopus australis*), Ridged Knotweed (*Persicaria* sp.) and Showy Willow-herb (*Epilobium pallidiflorum*). The community varies in structure from an open woodland or open grassy woodland to a closed shrubland and, where it has been highly disturbed, a grassland dominated by the Common Reed (*Phragmites australis*). Soft Twig-sedge is usually absent from seasonally-inundated sites. At drier sites Variable Sword-sedge (*Lepidosperma laterale* var. *majus*) is frequently co-dominant with the *Carex* species. Blackwood (*Acacia melanoxylon*) and Slender Tussock-grass (*Poa tenera*) are also found at the drier sites. Where the community is associated with well-defined stream-beds or near-permanent flowing water, Woolly Tea-tree may form a closed shrubland with scattered, emergent Mountain Swamp Gum. Ground cover species there include other species characteristic of seasonally inundated sites, such as Wing Pennywort (*Hydrocotyle pterocarpa*), Small River Buttercup (*Ranunculus rivularis* = *Ranunculus amphitrichus*) and Swamp Club-sedge (*Isolepis inundata*). Scented Paperbark (*Melaleuca squarrosa*) can be found co-dominant with Woolly Tea-tree in the lower reaches of ephemeral tributaries. In these areas, Mountain Swamp Gum has a cover of 5-20%.

The only known occurrence of the Sedge-rich *Eucalyptus camphora* Swamp Community is within the Yellingbo Nature Conservation Reserve in the Yarra Valley, 50 km east of Melbourne.

### **Semi-arid Herbaceous Pine Woodland Community**

The Semi-arid Herbaceous Pine Woodland Community is a woodland or open woodland mainly dominated by slender cypress-pines, and with few or no shrubs. The dominant tree is Slender Cypress-pine (*Callitris gracilis*), with occasional Buloke (*Allocasuarina luehmannii*) towards the margins. Shrubs are uncommon but typically include Small Cooba (*Acacia ligulata*). At Hattah-Kulkyne and elsewhere in the far north of the State, Narrow-leaf Hopbush (*Dodonaea viscosa* subsp. *angustissima*) has become abundant in many current and former stands.

The ground layer of this community type is overwhelmingly herbaceous; typical herbs are Poached-eggs Daisy (*Polycalymma* = *Polycalymma stuartii*), Mediterranean Turnip (*Brassica tournefortii*), Tangled Burr-Daisy (*Calotis erinacea*), Cushion Knawel (*Scleranthus minusculus*), Australian Stonecrop (*Crassula sieberiana*), Velvet Tobacco (*Nicotiana velutina*), Flannel Cudweed (*Actinobole uliginosum*), Sand Catchfly (*Silene apetala* = *S. apetala* var. *apetala*) and Mediterranean Catchfly (*Silene nocturna*).

This community was once widespread on relatively dry, deeper sandy soils of the Mallee, especially on the crests of dunes, lunettes and sand-ridges, though many of these sites have since been cleared for farming. It is also present on public land in parts of the Big Desert and Sunset Country. The community appears to be sensitive both to fire and browsing by rabbits.

### **Semi-arid Herbaceous Pine-Buloke Woodland Community**

The Semi-arid Herbaceous Pine-Buloke Woodland Community is a woodland or open woodland typically dominated by both slender cypress-pine and buloke trees, without a shrub layer and with a largely herbaceous ground layer. It occurs where the soil surface is sandy but finer-grained from a few centimetres depth downwards.

The dominant trees are Slender Cypress-pine (*Callitris gracilis*) usually in association with Buloke (*Allocasuarina luehmannii*). The ground layer consists largely of herbs such as Australian Stonecrop (*Crassula sieberiana*), Dense Crassula (*Crassula colorata*), Hard-headed Daisy (*Brachyscome lineariloba*), Small Purslane (*Calandrinia eremaea*) and Austral Carrot (*Daucus glochidiatus*), with the introduced grasses False Hair-grass (*Pentameris* = *Pentaschistis airoides*) and Arabian Grass (*Schismus barbatus*). Where this community occurs close to dunes or ridges, there is often a Semi-arid Herbaceous Pine Woodland Community on higher ground on the deeper, drier sand of the crests.

Before the accretion of loose surface sand that followed European settlement, occupied sites were subject to occasional waterlogging. This community type is mostly restricted to infrequently-burnt public land in the north-west of the state, especially in the Murray-Sunset, Hattah-Kulkyne and Wyperfeld National Parks, but also occurs on some other sites licensed for grazing.

### **Semi-arid Northwest Plains Buloke Grassy Woodland Community**

The Semi-arid Northwest Plains Buloke Grassy Woodland Community is open woodland in which Buloke (*Allocasuarina luehmannii*) is the dominant tree, sometimes in association with Black Box (*Eucalyptus largiflorens*) and/or Yellow Gum (*E. leucoxydon*).

A shrub layer is present, with Gold-dust Wattle (*Acacia acinacea*) as the dominant shrub, usually accompanied by smaller sub-shrubs such as Variable Sida (*Sida corrugata*), Frosted Goosefoot (*Chenopodium desertorum* = *C. desertorum* subsp. *desertorum*), Nodding Saltbush (*Einadia nutans* = *E. nutans* subsp. *nutans*), Fuzzy New Holland Daisy (*Vittadinia cuneata* = *V. cuneata* var. *cuneata*) and Woolly New Holland Daisy (*Vittadinia gracilis*). The ground layer consists of grasses such as Bristly Wallaby-grass (*Danthonia setacea* = *Rytidosperma*

*setaceum*), Feather Spear-grass (*Austrostipa elegantissima*), and Crested Spear-grass (*Austrostipa blackii*) accompanied by such species as Scented Mat-rush (*Lomandra effusa*), Grassland Wood-sorrel (*Oxalis perennans*) and Hare's-foot Clover (*Trifolium arvense* = *T. arvense* var. *arvense*).

This community type was once widespread across the plains of north-western Victoria and the Wimmera, on sites where soils are relatively fertile and subject to seasonal water-logging and little fire. Most of the sites on which it occurred were settled early and are now private land mainly cleared for farming.

### **Semi-arid Shrubby Pine-Buloke Woodland Community**

The Semi-arid Shrubby Pine-Buloke Woodland is an open woodland or woodland community with a mix of slender cypress-pine and buloke and a characteristic shrub component. The community is dominated by Slender Cypress-pine (*Callitris gracilis*) and variable numbers of Buloke (*Allocasuarina luehmannii*) trees.

The shrub layer consists of often-widespread species such as Ruby Saltbush (*Enchylaena tomentosa* = *E. tomentosa* var. *tomentosa*), Slender or Narrow-leaf Hop-bush (*Dodonaea viscosa* subsp. *angustissima*), Weeping Pittosporum (*Pittosporum angustifolium*), Hedge Saltbush (*Rhagodia spinescens*), Pimelea Daisy-bush (*Olearia pimeleoides*), Cattlebush (*Alectryon oleifolius* subsp. *canescens*) and Horned Bassia (*Sclerolaena diacantha*). The ground layer is dominated by herbaceous annuals such as Small Purslane (*Calandrinia eremaea*), Mediterranean Turnip (*Brassica tournefortii*), Austral Carrot (*Daucus glochidiatus*), Little Medic (*Medicago minima*), Hairy Burr-daisy (*Calotis hispidula*), Hard-headed Daisy (*Brachyscome lineariloba*) and Flannel Cudweed (*Actinobole uliginosum*). Longer-lived hebs are represented by Dissected New Holland Daisy (*Vittadinia dissecta* = *V. dissecta* var. *dissecta*), and Nodding Saltbush (*Einadia nutans* = *E. nutans* subsp. *nutans*). Although grass species are not diagnostic of this community, Feather Spear-grass (*Austrostipa elegantissima*) is often present.

Semi-arid Shrubby Pine-Buloke Woodland is typically found on flat or slightly undulating land with sandy loam soils over finer-grained substrates, where the soil is occasionally waterlogged. It is found mainly in the near north-west of the State, typically on sites that have been free of fire for many decades. Nearly all the sites are on public land.

### **Victorian Mallee Bird Community**

The Victorian Mallee Bird Community is defined as an assemblage of twenty native bird species and subspecies characteristic of and mainly or totally restricted to habitats dominated by mallee vegetation, and distinctive of the Victorian geographical region that characterizes their distribution.

The taxa concerned are the Black-eared Miner (*Manorina melanotis*), Mallee Emu-wren (*Stipiturus mallee*), Malleefowl (*Leipoa ocellata*), Purple-gaped Honeyeater (*Lichenostomus cratitius*), Slender-billed Thornbill (*Acanthiza iredalei*), Southern Scrub-robin (*Drymodes*

*brunneopygia*), Splendid Fairy-wren (*Malurus splendens*), Striated Grasswren (*Amytornis striatus*), Red-lored Whistler (*Pachycephala rufogularis*), Redthroat (*Pyrrholaemus brunneus*), Yellow-plumed Honeyeater (*Lichenostomus ornatus*), and the Mallee forms of the Brown-headed Honeyeater (*Melithreptus brevirostris pallidiceps*), Chestnut Quail-thrush (*Cinclosoma castanotus castanotus*), Grey-fronted Honeyeater (*Lichenostomus plumulus graingeri*), Jacky Winter (*Microeca fascinans assimilis*), Shy Hylacola (*Hylacola cauta cauta* = *Calamanthus cautus cautus*), Regent Parrot (*Polytelis anthopeplus monarchoides*), Western Whipbird (*Psophodes nigrogularis leucogaster*), White-eared Honeyeater (*Lichenostomus leucotis novaenorca*) and Yellow-rumped Pardalote (*Pardalotus punctatus xanthopyge*).

Many are ground-foraging species, or dependent on natural mallee ground or shrub cover in other ways. The community includes two mallee specialists (Red-lored Whistler, Mallee Emu-wren) and a number of others that are largely restricted to mallee habitats, especially vegetation that has high densities of Yellow-plumed Honeyeaters and/or the Inland Thornbill (*Acanthiza apicalis*). Eight of these species are sufficiently rare to be listed under the *Flora and Fauna Guarantee Act* as threatened taxa: the Black-eared Miner, Mallee Emu-wren, Malleefowl, Red-lored Whistler, Regent Parrot, Western Whipbird, Redthroat and Slender-billed Thornbill.

### **Victorian Temperate Woodland Bird Community**

The Victorian Temperate Woodland Bird Community has been defined as a suite of bird species, mainly associated with drier woodlands on the slopes and plains north of the Great Dividing Range, that seem to have declined markedly in numbers since records began.

The 24 species in this group are the Painted Button-quail (*Turnix varia*), Bush Stone-curlew (*Burhinus grallarius*), Red-tailed Black-Cockatoo (*Calyptorhynchus banksii graptogyne*), Little Lorikeet (*Glossopsitta pusilla*), Superb Parrot (*Polytelis swainsonii*), Swift Parrot (*Lathamus discolor*), Turquoise Parrot (*Neophema pulchella*), Barking Owl (*Ninox connivens*), Brown Treecreeper (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Western Gerygone (*Gerygone fusca*), Regent Honeyeater (*Anthochaera* = *Xanthomyza phrygia*), Yellow-tufted Honeyeater (*Lichenostomus melanops meltoni*), Fuscous Honeyeater (*Lichenostomus fuscus*), Black-chinned Honeyeater (*Melithreptus gularis*), Brown-headed Honeyeater (*Melithreptus brevirostris*), Painted Honeyeater (*Grantiella picta*), Jacky Winter (*Microeca fascinans*), Red-capped Robin (*Petroica goodenovii*), Hooded Robin (*Melanodryas cucullata*), Grey-crowned Babbler (*Pomatostomus temporalis*), Ground Cuckoo-shrike (*Coracina maxima*), Apostlebird (*Struthidea cinerea*), and Diamond Firetail (*Stagonopleura guttata*).

The distributions of these birds differ between species. Many are closely associated with (but not exclusive to) northern Victorian drier woodlands dominated by box, stringybark, ironbark, yellow gum or river red gum eucalypts, or by buloke or cypress-pine. Many such woodlands originally had an open structure, a light shrubby understorey, a grassy ground cover with fallen timber, an abundance of tree-hollows and other nesting sites, and available sources of seeds, nectar and insects throughout the year. Since European settlement, most of these woodlands have been cleared for agricultural production, or fragmented and degraded, greatly reducing the resources available to these birds; many sites now also have cats and foxes present. Some species are found in other habitats: the Superb Parrot, Apostlebird and, to a lesser extent, the

Ground Cuckoo-shrike are mainly found in habitats along or near the Murray River, while the Red-tailed Black-Cockatoo is confined to the far south-west of the state, in woodlands on sandy soils that are dominated by Brown Stringybark (*Eucalyptus baxteri*) and Desert Stringybark (*E. arenacea*) and the nearby woodlands dominated by River Red Gum (*E. camaldulensis*), Yellow Gum (*E. leucoxylo*n) or Buloke (*Allocasuarina luehmannii*).

### **Warm Temperate Rainforest (Coastal East Gippsland) Community**

The Warm Temperate Rainforest (Coastal East Gippsland) Community is rainforest with a relatively simple structure. Its rainforest trees lack epiphytes while drought-tolerant ferns dominate the ground layer, suggesting that this community represents an intermediate between warm temperate and dry rainforest in Victoria.

The canopy layer usually consists of Blackwood (*Acacia melanoxylon*), Yellow-wood (*Acronychia oblongifolia*), Lilly Pilly (*Acmena smithii* = *Syzygium smithii*), Sweet Pittosporum (*Pittosporum undulatum*) and occasionally Blue Olive-berry (*Elaeocarpus reticulatus*), Muttonwood (*Rapanea howittiana*) and Boobialla (*Myoporum insulare*). This is the only Victorian rainforest community in which the coastal species Boobialla and Yellow-wood are consistently represented, and Coast Banksia (*Banksia integrifolia* var. *integrifolia*) can be quite abundant. Lianes (climbers) at the canopy level are Staff Climber (*Celastrus australis*), White Milk Vine (*Marsdenia rostrata*) and Wonga Vine (*Pandorea pandorana*). The wiry climbers Shepherd's Delight (*Geitonoplesium cymosum*), Wombat Berry (*Eustrephus latifolius*) and Austral Sarsparilla (*Smilax australis*) may be conspicuous in the understorey. Two herbaceous climbers are also found in this community: Bearded Tylophora (*Tylophora barbata*) and Austral Star Cucumber (*Sicyos australis*). Drought-tolerant ferns in the understorey include Sickie Fern (*Pellaea falcata*), Necklace Fern (*Asplenium flabellifolium*), Tender Brake (*Pteris tremula*), Common Rasp Fern (*Doodia aspera* subsp. *australis*) and Bracken (*Pteridium esculentum*). The herbaceous ground layer consists of common herbs such as Kidney Weed (*Dichondra repens*), Forest Nettle (*Urtica incisa*) and White Elderberry (*Sambucus gaudichaudiana*, a species listed as threatened under the FFG Act).

This community occurs on relatively dry, coastal sites, usually in shallow gullies and on abandoned sea cliffs on sandy-clay to clay-loam soils. Occasionally it occurs on deep aeolian sands on dunes. It is found at or near the Gippsland Lakes (especially Lakes King and Tyers) and at the mouth of the Snowy River near Marlo.

### **Warm Temperate Rainforest (Cool Temperate Overlap, Howe Range) Community**

The Warm Temperate Rainforest (Cool Temperate Overlap, Howe Range) is a primarily warm temperate community, though with some attributes of a cool temperate rainforest. Amongst rainforests it is notable for its poor liane structure and high fern diversity.

The canopy layer may consist entirely of Eastern Leatherwood (*Eucryphia moorei*), a species unique to this type of rainforest in Victoria. Other important canopy species are Lilly Pilly (*Acmena smithii* = *Syzygium smithii*), Sweet Pittosporum (*Pittosporum undulatum*) and Muttonwood (*Rapanea howittiana*). The understorey contains species usually associated with a

Cool Temperate Rainforest, such as Mountain Correa (*Correa lawrenciana*), Austral Mulberry (*Hedycarya angustifolia*), Forest Geebung (*Personia silvatica*), Broad-leaf Panax (*Polyscias sambucifolia* ssp. A), Slender Tree-fern (*Cyathea cunninghamii*), Weeping Spleenwort (*Asplenium flaccidum* ssp. *flaccidum*) and Spreading Fan-fern (*Sticherus lobatus*). Vascular epiphytes are diverse; they include the epiphytic Common Finger-fern (*Grammitis billardierei*), and Austral Filmy Fern (*Hymenophyllum australe*), and several rare species including Oval Fork-fern (*Tmesipteris ovata*) and Tangle Orchid (*Plectorrhiza tridentata*).

This community is known only from a small (5 km<sup>2</sup>) area on the south-western side of the Howe Range in far East Gippsland, a site that has deep, fertile soils. It lies entirely within the Croajingolong National Park.

### **Warm Temperate Rainforest (East Gippsland Alluvial Terraces) Community**

The Warm Temperate Rainforest (East Gippsland Alluvial Terraces) Community has a low to moderate density of canopy species and is considered the most diverse rainforest community in the State. Stands can be tall and well developed on smaller streams, although on larger streams the canopy tends to be uneven in height and patchy in distribution.

The canopy is usually dominated by Lilly Pilly (*Acmena smithii* = *Syzygium smithii*). Muttonwood (*Rapanea howittiana* = *Myrsine howittiana*), is often present but is less dominant. The most common emergent, in margins or in gaps, is Blackwood (*Acacia melanoxylon*), with Prickly Currant-bush (*Coprosma quadrifida*) usually present. There is a high diversity of lianes (vines) present with robust, wiry, cane-like and herbaceous climbers common and usually very conspicuous. The understorey is dominated by tree ferns, and abundant and diverse ground ferns. Several vascular epiphytes are common.

This community is restricted to lowlands below 470 m, where it grows on fertile alluvial flats of ephemeral creeks and the floodplains of permanent streams. The community occurs from the Mitchell River east to Mallacoota, with an isolated and disjunct occurrence in the Strzelecki Ranges at Morwell National Park.

### **Warm Temperate Rainforest (Far East Gippsland) Community**

The Warm Temperate Rainforest (Far East Gippsland) Community is complex in structure. It is characterized by the presence of emergent species over a closed canopy of typical rainforest trees and lianes (climbers), beneath which is a dense layer of tree-ferns, shrubs, ground-ferns and herbs.

The emergent species in this community include Blackwood (*Acacia melanoxylon*) and occasionally Mountain Grey-gum (*Eucalyptus cypellocarpa*). The dominant canopy species are Lilly Pilly (*Acmena smithii* = *Syzygium smithii*), Sweet Pittosporum (*Pittosporum undulatum*) and sometimes Muttonwood (*Rapanea howittiana* = *Myrsine howittiana*). A diversity of lianes and scrambling species densely clothe the tree canopy. The most common and dominant of these include Jungle Grape (*Cissus hypoglauca*), Milk Vine (*Marsdenia rostrata*), Wonga Vine

(*Pandorea pandorana*) and Jasmine Morinda (*Morinda jasminoides*). The widespread Warm Temperate Rainforest climbers Wombat Berry (*Eustrephus latifolius*) and Austral Sarsaparilla (*Smilax australis*) also occur. Understorey shrubs include the Large Mock-olive (*Notelaea venosa*), Austral Mulberry (*Hedycarya angustifolia*), Mountain Pepper (*Tasmannia lanceolata*), Prickly Currant (*Coprosma quadrifida*) and Blue Oliveberry (*Elaeocarpus reticulatus*). Soft Tree-fern (*Dicksonia antarctica*) and Rough Tree-fern (*Cyathea australis*) are the most common and structurally dominant tree-ferns in the community. The ground layer is dominated by ground-ferns, the most abundant of which are Gristle-fern (*Blechnum cartilagineum*), Fishbone Water-fern (*B. nudum*), Mother Shield-fern (*Polystichum proliferum*), Creeping Shield-fern (*Lastreopsis microsora* subsp. *microsora*) and Shiny Shield-fern (*L. acuminata*). Vascular epiphytes are common, the most diverse group being the ferns and fern allies such as Weeping Spleenwort (*Asplenium flaccidum* ssp. *flaccidum*), Jungle Bristle-fern (*Macroglena caudata* = *Cephalomanes caudatum*), Veined Bristle-fern (*Polyphlebium venosum* = *Crepidomanes venosum*), Common Filmy-fern (*Hymenophyllum cupressiforme*), Small Fork-fern (*Tmesipteris parva*) and the flowering plants Fieldia (*Fieldia australis*) and Butterfly Orchid (*Sarcochilus australis*).

A number of secondary species may occur within the community. Hazel Pomaderris (*Pomaderris aspera*), Blanket-leaf (*Bedfordia arborescens*), Victorian Christmas Bush (*Prostanthera lasianthos* = *P. lasianthos* var. *lasianthos*), Trailing Guinea-flower (*Hibbertia dentata*), Forest Wire-grass (*Tetrarrhena juncea*) and Forest Bindweed (*Calystegia marginata*) are indicative of disturbance. Disturbance results from incursion by fire, tree fall or land slip that creates a gap, or from flooding associated with stream margins. Gaps resulting from disturbance are often filled by these secondary species, as well as by rampant thickets of Jungle Grape (*Cissus hypoglauca*) and Queensland Bramble (*Rubus hillii* = *Rubus moluccanus* var. *trilobus*) and an abundance and variety of herb species.

The Warm Temperate Rainforest (Far East Gippsland) community occurs on deep rich humus soils in gullies, gully-heads and adjoining south-easterly slopes of coastal hills and plains east of Cann River. The rainforest on the south-eastern side of Mt Drummer, in the Alfred National Park, is a prominent example.

### **Western (Basalt) Plains Grasslands Community**

The Western (Basalt) Plains Grasslands Community is an open grassland community found mainly on undisturbed, poorly-drained heavy clay soils on the basalt plains of western Victoria. These soils are usually waterlogged in winter and very hard, dry and cracking in summer. The vegetation is characteristically dominated by perennial native grasses, with very few eucalypts and shrubs, and an almost complete absence of introduced grasses and weeds.

Perennial native plants predominate. On drier sites, the community is usually dominated by Kangaroo Grass (*Themeda triandra*), together with composites such as Common Everlasting (*Chrysocephalum apiculatum*) and Lemon Beauty-heads (*Calocephalus citreus*). On moister sites tussock grasses, particularly Wallaby Grass (*Austrodanthonia* spp. = *Rytidosperma* spp.), Spear Grass (*Austrostipa* spp.) and Tussock Grass (*Poa* spp.) tend to predominate, often with Common Onion Orchid (*Microtis unifolia*) and Pale Sundew (*Drosera peltata*) in spaces between the tussocks. Other perennial herbs found throughout its distribution include Common Bog-

rush (*Schoenus apogon*), Blue Devil (*Eryngium ovinum*), Sheep's Burr (*Acaena echinata*), Pink Bindweed (*Convolvulus angustissimus*) and Scaly Buttons (*Leptorhynchos squamatus*). Trees and shrubs are more or less confined to drainage lines and the margins of ephemeral wetlands that frequently occur in depressions. There is a rich reptile fauna that includes the Striped Legless Lizard (*Delma impar*), Cunningham's Skink (*Egernia cunninghami*), Eastern Striped Skink (*Ctenotus robustus*) and Little Whip Snake (*Parasuta = Unechis flagellum*).

A number of listed threatened taxa are known from this community. Threatened plants include Adamson's Blown-grass (*Lachnagrostis = Lachnagrostis adamsonii*), Swollen Swamp Wallaby-grass (*Amphibromus pithogastrus*), Sunshine Diuris (*Diuris fragrantissima*), Small Golden Moths (*Diuris basaltica*), Basalt Greenhood (*Pterostylis basaltica*), Small Milkwort (*Comesperma polygaloides*), Clover Glycine (*Glycine latrobeana*), Tough Scurf-pea (*Cullen tenax*), and the Button Wrinklewort (*Rutidosia leptorhynchoides*) and Large-fruit Fireweed or Groundsel (*Senecio macrocarpus*). Threatened grassland fauna include the Striped Legless Lizard, Grassland Earless Dragon (*Tympanocryptis pinguicollis = Tympanocryptis lineata pinguicollis*), Eastern Barred Bandicoot (*Perameles gunnii*), the Brolga (*Grus rubicundus*) and the Plains-wanderer (*Pedionomus torquatus*).

Although widespread at the time of European settlement, only scattered remnants of the Western (Basalt) Plains Grasslands Community now remain on the Victorian Volcanic Plain, mainly on long-uncultivated sites between the Plenty River in the east, Hamilton in the west, Beaufort in the north and Colac in the south. The near-absence of tree cover is thought to be due to the heavy basaltic soils and to frequent firing prior to European settlement.

### **Western Basalt Plains (River Red Gum) Grassy Woodland**

This grassy woodland community has a clearly-recognizable structure made up of an open canopy of River Red Gum (*Eucalyptus camaldulensis*), a middle layer chiefly of scattered wattles such as Golden Wattle (*Acacia pycnantha*) and Hedge Wattle (*A. paradoxa*) but including a few other shrubs as well, such as Tree Violet (*Hymenanthera dentata = Melicytus dentatus*), and a ground layer dominated by grasses. In its least disturbed state, the ground layer is predominantly tussock grasses such as Common Tussock Grass (*Poa labillardierei = P. labillardierei* var. *labillardierei*) and Wallaby Grass (*Rytidosperma* spp.), together with Kangaroo Grass (*Themeda triandra*) and various forbs in the spaces between the tussocks. The composition of the ground layer varies greatly from site to site, being heavily influenced locally by the amount of tree cover, soil characteristics and the site's grazing and fire histories. More disturbed sites have a high proportion of introduced grasses and forbs in the ground layer.

The original description of this community was based on its occurrences on the volcanic plains immediately north of Melbourne, but this community also occurs across the Newer Basalt volcanic plains of Western Victoria as scattered remnants. These are present from the Melbourne region in the east to the western border of the state between the 500 and 700 mm mean annual rainfall isohyets on plains sites that typically have moderately well-drained loamy or clayey soils over a relatively shallow basalt bedrock.