

IBRA 6.1 Region Descriptions

AA Australian Alps 1214902 ha ACT, NSW, VIC

A series of high elevation plateaux capping the South Eastern Highlands (Region SEH) and the southern tablelands in NSW. The geology consists largely of granitic and basaltic rocks. Vegetation is dominated by alpine herbfields, and other treeless communities, snow gum woodlands and montane forests dominated by alpine ash. The Victorian Alps component has been modified, contracting the Alps region essentially to the 1200 metre contour. This boundary requires further work.

ARC Arnhem Coast 3331785 ha NT

Coastal strip extending from just east of Cobourg Peninsula to just north of the mouth of the Rose River in southeastern Arnhem Land, and including many offshore islands, most notably Groote Eylandt (and its satellites), the English Company and Wessel group, and the Crocodile Islands. Coastal vegetation includes well developed heathlands, mangroves and saline flats, with some floodplain and wetland areas, most notably the extensive paperbark forest and sedgeland of the Arafura Swamp. Coastal dune systems are unusually well developed on sections of Groote Eylandt and Cape Arnhem Peninsula. Rugged Cretaceous sandstone areas occur on Groote Eylandt and islands of the Wessel group. Tertiary laterites are extensive on the Gove Peninsula. Inland from the coast, the dominant vegetation type is eucalypt tall open forest, typically dominated by Darwin woollybutt (*Eucalyptus miniata*) and Darwin stringybark (*E. tetradonta*), with smaller areas of monsoon rainforest and eucalypt woodlands.

ARP Arnhem Plateau 2306023ha NT

The extensive and highly dissected Proterozoic sandstone massif of western Arnhem Land, which forms the headwaters of many of the major river systems of the Top End. It supports an unusually diverse biota, including very many relictual and endemic plant and animal species. The major vegetation types include sandstone heathlands, rainforests (characteristically dominated by the endemic tree *Allosyncarpia ternata*), hummock grasslands and eucalypt open woodlands (with a range of dominants including *Eucalyptus phoenicea*, *E. kombolgiensis*, *E. miniata* and *E. dichromophloia*). Most of the bioregion is Aboriginal land, including a major part of Kakadu National Park.

AW Avon Wheatbelt 9517104ha WA

Area of active drainage dissecting a Tertiary plateau in Yilgarn Craton. Gently undulating landscape of low relief. Proteaceous scrub-heaths, rich in endemics, on residual lateritic uplands and derived sandplains; mixed eucalypt, *Allocasuarina huegeliana* and Jam-York Gum woodlands on Quaternary alluvials and eluvials. Semi-arid (Dry) Warm Mediterranean. The south eastern boundary has been modified incorporating a small portion into the Mallee region. Extensively cleared for agriculture.

BEL Ben Lomond 657500ha TAS

Humid cool/cold mountain ranges situated in Tasmania's inland north-east. The mountains are capped by Jurassic dolerite with shallow gradational soils. Silurian-Devonian siltstones and mudstones covered with gradational soils constitute a substantial part of the lower hills. Lowland vegetation comprising mainly open sclerophyll woodlands and heath while the upper slopes consist of wet sclerophyll forests, some rainforest and alpine vegetation in the highest regions. Land use: forestry, mining and agriculture (grazing).

BHC Broken Hill Complex 5682303 ha NSW, SA

Hills and colluvial fans on Proterozoic rocks; desert loams and red clays, lithosols and calcareous red earths; supporting chenopod shrublands *Maireana* spp. - *Atriplex* spp. shrublands, and mulga open shrublands *Acacia aneura*.

BBN Brigalow Belt North 13612981ha QLD

Permian volcanics and Permian-Triassic sediments of the Bowen and Galilee Basins, Carboniferous and Devonian sediments and volcanics of the Drummond Basin and coastal blocks, Cambrian and Ordovician rocks of the Anakie inlier and associated Tertiary deposits. Subhumid to semiarid. Woodlands of ironbarks (*E. melanophloia*, *E. crebra*), poplar box and Brown's box (*E. populnea*, *E. brownii*) and brigalow (*Acacia harpophylla*), blackwood (*A. argyrodendron*) and gidgee (*A. cambagei*). Region reaches the coast in the dry coastal corridor of Proserpine - Townsville.

BBS Brigalow Belt South 13612982 ha NSW, QLD

Predominantly Jurassic and younger deposits of the Great Artesian Basin and Tertiary deposits with elevated basalt flows. Subhumid. Eucalyptus woodlands and open forests of ironbarks, poplar box, spotted gum (*E. maculata*), cypress pine (*Callitris glaucophylla*), Bloodwoods (eg. *E. trachyphloia*, *E. hendersonii* ms) brigalow-belah forests (*E. harpophylla*, *Casuarina cristata*) and semi-evergreen vine thicket.

BRT Burt Plain 7379719 ha NT

Plains and low rocky ranges of Pre-Cambrian granites with mulga and other acacia woodlands on red earths.

CA Central Arnhem 3462370 ha NT

Gently sloping terrain and low hills on Cretaceous sandstones and siltstones and lateritised Tertiary material; yellow earthy sands and shallow stony sands; Darwin Woollybutt and Darwin Stringybark open forest to woodland with grass understorey.

CAR Carnarvon 8427563 ha WA

Quaternary alluvial, aeolian and marine sediments overlying Cretaceous strata. A mosaic of saline alluvial plains with samphire and saltbush low shrublands, Bowgada low woodland on sandy ridges and plains, Snakewood scrubs on clay flats, and tree to shrub steppe over hummock grasslands on and between red sand dune fields. Limestone strata with *Acacia startii* / *bivenosa* shrublands outcrop in the north, where extensive tidal flats in sheltered embayments support Mangal. Arid

CHC Channel Country 30619374 ha QLD, NT, NSW, SA

Low hills on Cretaceous sediments; forbfields and Mitchell grass downs, and intervening braided river systems of coolibah *E. coolibah* woodlands and lignum/saltbush *Muehlenbeckia* sp./*Chenopodium* sp. shrublands. (Includes small areas of sand plains.)

CK Central Kimberley 7675587 ha WA

Hilly to mountainous country with parallel siliceous ranges of Proterozoic sedimentary rocks with skeletal sandy soils supporting *Plectrachne pungens* hummock grasses with scattered trees, and with earths on Proterozoic volcanics in valleys supporting Ribbon Grass with scattered trees. Open forests of River Gum and Pandanus occur along drainage lines. Dry hot tropical, sub-humid to semi-arid, summer rainfall.

CMC Central Mackay Coast 1462845 ha QLD

Humid tropical coastal ranges and plains. Rainforests (complex evergreen and semi-deciduous notophyll vine forest), *Eucalyptus* open forests and woodlands, *Melaleuca spp.* wetlands.

COO Coolgardie

Granite strata of Yilgarn Craton with Archaean Greenstone intrusions in parallel belts. Drainage is occluded. Mallees and scrubs on sandplains associated with lateritised uplands, playas and granite outcrops. Diverse woodlands rich in endemic eucalypts, on low greenstone hills, valley alluvials and broad plains of calcareous earths. In the west, the scrubs are rich in endemic Proteaceae, in the east they are rich in endemic acacias. Arid to Semi-arid Warm Mediterranean.

CP Cobar Peneplain

Undulating plains and low hills on Palaeozoic rocks; earths, lithosols; *E. populnea* and *E. intertexta* woodlands with mulga (*Acacia aneura*) in the more arid areas. Semi-arid climate.

CR Central Ranges

High proportion of Proterozoic ranges and derived soil plains, interspersed with red Quaternary sandplains. The sandplains support low open woodlands of either Desert Oak or Mulga over *Triodia basedowii* hummock grasslands. Low open woodlands of Ironwood (*Acacia estrophiolata*) and Corkwoods (*Hakea spp.*) over tussock and hummock grasses often fringe ranges. The ranges support mixed wattle scrub or *Callitris glaucophylla* woodlands over hummock and tussock grasslands. Arid, with summer and winter rain.

CYP Cape York Peninsula

Complex geology dominated by the Torres Strait Volcanics in the north, the metamorphic rocks and acid intrusive rocks of various ages of the Coen-Yambo Inlier which runs north- south along the eastern margin of the region and encompasses the high-altitude/high-rainfall areas of Iron Range and McIlwraith Range. The deeply dissected sandstone plateaus and ranges of the Battle Camp Sandstones lie in the south of the region adjacent to the undulating Laura Lowlands composed of residual weathered sands and flat plains of colluvial and alluvial clays, silts and sands. The west of the region is dominated in the south by the extensive Tertiary sand sheet dissected by intricate drainage systems of the Holroyd Plain, the Tertiary laterite of the undulating Weipa Plateau, the low rises of Mesozoic sandstones, with the northern extension of the Weipa Plateau and extensive coastal plains adjoining the Gulf of Carpentaria. Extensive aeolian dune fields lie in the east associated with Cape Bedford/Cape Flattery in the south and the Olive and Jardine Rivers.

The vegetation is predominantly *Eucalyptus tetradonta* and *Corymbia tessellaris*/*C. clarksoniana* woodlands, *Melaleuca viridiflora* woodlands, heathlands and sedgeland, notophyll vine forests, with semi-deciduous mesophyll vine forests on the eastern ranges and deciduous vine thickets on drier western slopes. Extensive mangrove forests are found in Kennedy Inlet in the north east of the region and estuaries on both the west and east coasts. Tropical humid/maritime climate, with rainfall varying from 1000 mm to 1600 mm .

DAB Daly Basin

Gently undulating plains and scattered low plateau remnants on Palaeozoic sandstones, siltstones and limestones; neutral loamy and sandy red earths; Darwin Stringybark and Darwin Woollybutt open forest with perennial and annual grass understorey.

DAC Darwin Coastal

Gently undulating plains on lateritised Cretaceous sandstones and siltstones; sandy and loamy red and yellow earths and siliceous sands from near the mouth of the Victoria River to just west of Cobourgh Peninsula. The most notable vegetation feature is the extensive and diverse floodplain environment associated with the lower reaches of the many large river systems. There are also substantial areas of mangroves, and rainforest and other riparian vegetation fringing the rivers. Inland from the coast, the

dominant vegetation type is eucalypt tall open forest, typically dominated by Darwin woollybutt (*Eucalyptus miniata*) and Darwin stringybark (*E. tetradonta*). Large waterbird colonies are a major conservation value of the bioregion.

DEU Desert Uplands

Ranges and plains on dissected Tertiary surface and Triassic sandstones; woodlands of *E. whitei*, *E. similis* and *E. trachyphloia*.

DL Dampierland

- (1) Quaternary sandplain overlying Jurassic and Mesozoic sandstones with Pindan. Hummock grasslands on hills.
- (2) Quaternary marine deposits on coastal plains, with Mangal, samphire - *Sporobolus* grasslands, *Melaleuca acacioides* low forests, and *Spinifex* - *Crotalaria* strand communities.
- (3) Quaternary alluvial plains associated with the Permian and Mesozoic sediments of Fitzroy Trough support tree savannas of *Crysopogon* - *Dichanthium* grasses with scattered *Eucalyptus microtheca* - *Lysiphyllum cunninghamii*. Riparian forests of River Gum and Cadjeput fringe drainages.
- (4) Devonian reef limestones in the north and east support sparse tree steppe over *Triodia intermedia* and *T. wiseana* hummock grasses and vine thicket elements.

Dry hot tropical, semi-arid summer rainfall.

DMR Davenport Murchison Ranges

Low but rugged rocky hills, formed from folded volcanics and sandstone, siltstone and conglomerates, which contrast starkly with the generally flat sandplain surrounds of the Tanami bioregion. Vegetation includes hummock grasslands and low open woodlands dominated by eucalypt and *Acacia* species.

DRP Darling Riverine Plain

Alluvial fans and plains; summer/winter rainfall in catchments, including occasional cyclonic influence; grey clays; woodlands and open woodlands dominated by *Eucalyptus spp.*

EIU Einasleigh Uplands

High plateau of Palaeozoic sediments, granites, and basalts; dominated by ironbark (*Eucalyptus spp.*) woodlands.

ESP Esperance Plains

Proteaceous Scrub and mallee heaths on sandplain overlying Eocene sediments; rich in endemics. Herbfields and heaths (rich in endemics) on abrupt granite and quartzite ranges that rise from the plain. Eucalypt woodlands occur in gullies and alluvial foot-slopes. Warm Mediterranean.

EYB Eyre and Yorke Block

Archaean basement rocks and Proterozoic sandstones overlain by undulating to occasionally hilly calcarenite and calcrete plains and areas of aeolian quartz sands, with mallee woodlands, shrublands and heaths on calcareous earths, duplex soils and calcareous to shallow sands, now largely cleared for agriculture.

FIN Finke

Arid sandplains, dissected uplands and valleys formed from Pre-Cambrian volcanics with spinifex hummock grasslands and acacia shrublands on red earths and shallow sands

FLB Flinders Lofty Block

Temperate to arid Proterozoic ranges, alluvial fans and plains, and some outcropping volcanics, with the semi arid to arid north supporting native cypress, black oak (belah) and mallee open woodlands, Eremophila and Acacia shrublands, and bluebush/saltbush chenopod shrublands on shallow, well-drained loams and moderately-deep, well-drained red duplex soils. The increase in rainfall to the south corresponds with an increase in low open woodlands of *Eucalyptus obliqua* and *E. baxteri* on deep lateritic soils, and *E. fasciculosa* and *E. cosmophylla* on shallower or sandy soils.

FLI Flinders

Moist and dry subhumid warm coastal plains and granitic island chain comprised of the Furneaux islands and coastal north-eastern Tasmania. Devonian granites dominate the elevated areas of the subregion forming low rugged ranges. These are overlain by shallow stony/gravelly gradational or duplex soils carrying *Eucalyptus amygdalina* open forest and woodland with *Eucalyptus nitida* open heath on higher peaks. Quaternary/Tertiary materials overlain by deep sandy soils typify extensive lowland plains, coastal deposits and dunes. Coastal plains have been heavily modified by agriculture (grazing).

GAS Gascoyne

Rugged low Proterozoic sedimentary and granite ranges divided by broad flat valleys. Open mulga woodlands occur on shallow earthy loams over hardpan on the plains, with mulga scrub and Eremophila shrublands on the shallow stony loams of the ranges. The Carnegie Salient, in the east, is characterised by extensive salt lake features supporting succulent steppes. Arid.

GAW Gawler

Semi arid to arid, flat topped to broadly rounded hills of the Gawler Range Volcanics and Proterozoic sediments, low plateaux on sandstone and quartzite with an undulating surface of aeolian sand or gibbers and rocky quartzite hills with colluvial footslopes, erosional and depositional plains and salt encrusted lake beds, with black oak (belah) and myall low open woodlands, open mallee scrub, bluebush/saltbush open chenopod shrublands and tall mulga shrublands on shallow loams, calcareous earths and hard red duplex soils.

GD Gibson Desert

Lateritised upland on flat-lying Jurassic and Cretaceous sandstones of Canning Basin. Mulga parkland over *Triodia basedowii* on lateritic "buckshot" plains. Mixed shrub steppe of Acacia, Hakea and Grevillea over *Triodia pungens* on red sand plains and dune fields. Lateritic uplands support shrub steppe in the north and mulga scrub in the south. Quaternary alluvia associated with palaeo-drainage features support Coolabah woodlands over bunch grasses. Arid, mainly summer rainfall.

GFU Gulf Fall and Uplands

Undulating terrain with scattered low, steep hills on Proterozoic and Palaeozoic sedimentary rocks, often overlain by lateritised Tertiary material; skeletal soils and shallow sands; Darwin Boxwood and Variable-barked Bloodwood woodland to low open woodland with spinifex understorey.

GS Geraldton Sandplains

Mainly proteaceous scrub-heaths, rich in endemics, on the sandy earths of an extensive, undulating, lateritic sandplain mantling Permian to Cretaceous strata. Extensive York Gum and Jam woodlands occur on outwash plains associated drainage. Semi-arid (Dry) warm Mediterranean.

GSD Great Sandy Desert

Mainly tree steppe grading to shrub steppe in south; comprising open hummock grassland of *Triodia pungens* and *Plectrachne schinzii* with scattered trees of *Owenia reticulata* and Bloodwoods, and shrubs of *Acacia spp*, *Grevillea wickhamii* and *G. refracta*, on Quaternary red longitudinal sand dune fields overlying Jurassic and Cretaceous sandstones of the Canning, Centralian, Arunta and Armadeus Basins. *Casuarina*

decaisneana (Desert Oak) occurs in the far east of the region. Gently undulating lateritised uplands support shrub steppe such as *Acacia pachycarpa* shrublands over *Triodia pungens* hummock grass. Calcrete and evaporite surfaces are associated with occluded palaeo-drainage systems that traverse the desert; these include extensive salt lake chains with samphire low shrublands, and *Melaleuca glomerata* - *M. lasiandra* shrublands. Monsoonal influences are apparent in the north-western sector of this region. Arid tropical with summer rain.

GUC Gulf Coastal

Gently undulating plains with scattered rugged areas on Proterozoic sandstones and Tertiary sediments; sandy red earths and shallow gravelly, sandy soils; Darwin Stringybark woodland with spinifex understorey.

GUP Gulf Plains

Marine and terrestrial deposits of the Carpentaria and Karumba basins; plains, plateaus and outwash plains; woodlands and grasslands.

GVD Great Victoria Desert

Arid active sand-ridge desert of deep Quaternary aeolian sands overlying Permian and Mesozoic strata of the Officer Basin. Tree steppe of *Eucalyptus gongylocarpa*, Mulga and *E. youngiana* over hummock grassland dominated by *Triodia basedowii*. Arid, with summer and winter rain.

HAM Hampton

Quaternary marine dune systems on a coastal plain of the Eucla Basin, backed by stranded limestone scarp. Areas of marine sand are also perched along the top edge of the scarp. Various mallee communities dominate the limestone scree slopes and pavements, as well as the sandy surfaces. Alluvial and calcareous plains below the scarp support eucalypt woodlands and Myall open low woodlands.

JF Jarrah Forest

Duricrusted plateau of Yilgarn Craton characterised by Jarrah-Marri forest on laterite gravels and, in the eastern part, by Marri-Wandoo woodlands on clayey soils. Eluvial and alluvial deposits support *Agonis* shrublands. In areas of Mesozoic sediments, Jarrah forests occur in a mosaic with a variety of species-rich shrublands. Warm Mediterranean climate.

KAN Kanmantoo

Temperate, well defined uplands of Cambrian and Late Proterozoic marine sediments, and a lateritized surface becoming increasingly dissected northwards, with eucalypt open forests and woodlands and heaths on mottled yellow and ironstone gravelly duplex soils in the wetter areas, and *Eucalyptus odorata* and drooping sheoak on shallow rocky soils in drier areas. Extensively cleared for agriculture.

KIN King

Perhumid warm coastal plains and low hills comprising King Island and the north-western tip of Tasmania. It is a region of subdued topography and low relief. Precambrian metamorphic rocks are overlain by diverse soils, including recent marine deposits covered by deep sandy profiles that support extensive *Eucalyptus obliqua* open forest and *Nothofagus cunninghamii* closed forest. *Acacia melanoxylon* closed forest and *Melaleuca ericifolia* closed forest occur on poorly drained low-lying sites. The vegetation of King Island has been substantially degraded by clearing and burning following European settlement.

LSD Little Sandy Desert

Red Quaternary dune fields with abrupt Proterozoic sandstone ranges of Bangemall Basin. Shrub steppe of acacias, *Thryptomene* and grevilleas over *Plectrachne schinzii* on sandy surfaces. Sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities and bunch grasslands on alluvial deposits in and associated with ranges. Arid with summer rainfall.

MAC MacDonnell Ranges

High relief ranges and foothills covered with spinifex hummock grassland, sparse acacia shrublands and woodlands along watercourses.

MAL Mallee

Re-defined to include an area from the Coolgardie Bioregion - the area between Lake Hope, Forrestiana and Mount Holland, which comprises Salmon Gum and Morrell woodlands on greenstone, with smaller areas of mallee and *Acacia / Casuarina* thicket on sandplains.

The south-eastern part of Yilgarn Craton is gently undulating, with partially occluded drainage. Mainly mallee over myrtaceous-proteaceous heaths on duplex (sand over clay) soils. *Melaleuca* shrublands characterise alluvia, and *Halosarcia* low shrublands occur on saline alluvium. A mosaic of mixed eucalypt woodlands and mallee occur on calcareous earth plains and sandplains overlying Eocene limestone strata in the east. Semi-arid (Dry) Warm Mediterranean. Extensively cleared for agriculture.

MDD Murray - Darling Depression

An extensive gently undulating sand and clay plain of Tertiary and Quaternary age frequently overlain by aeolian dunes. Vegetation consists of semi-arid woodlands of Black Oak / Belah, Bullock Bush/ Rosewood and *Acacia spp.*, mallee shrublands and heathlands and savanna woodlands.

The region is known in Victoria as the Victorian Mallee region and characteristically has few surface water bodies because its soils are highly permeable and its climate promotes high evaporative losses. Approximately 70 per cent of Victoria's mallee vegetation has been cleared and as a direct consequence of farming practices, the 1930s saw a part of the Victorian Mallee become one of the worst wind eroded areas in Australia. Substantial areas of mallee remain today in the western aeolian dunes, mainly in South Australia and but also western NSW. Clearing has also been widespread in the north eastern portion of the bioregion in NSW particularly on the undulating plains and relict river channels and lakes associated with the Murray and Darling Rivers.

MGD Mitchell Grass Downs

Undulating downs on shales and limestones; *Astrebla spp.* grasslands and *Acacia* low woodlands. Grey and brown cracking clays.

MII Mount Isa Inlier

Rugged hills and outwash, primarily associated with Proterozoic rocks; skeletal soils; low open eucalypt woodlands dominated by *Eucalyptus leucophloia* and *E. pruinosa*, with a *Triodia pungens* understorey. Semi-Arid.

ML Mulga Lands

Undulating plains and low hills on Cainozoic sediments; red earths and lithosols; *Acacia aneura* shrublands and low woodlands.

MUR Murchison

Mulga low woodlands, often rich in ephemerals, on outcrop hardpan wash plains and fine-textured Quaternary alluvial and eluvial surfaces mantling granitic and greenstone strata of the northern part of the Yilgarn Craton. Surfaces associated with the occluded drainage occur throughout with hummock grasslands on Quaternary sandplains, saltbush shrublands on calcareous soils and *Halosarcia* low shrublands on saline alluvia. Areas of red sandplains with mallee-mulga parkland over hummock grasslands occur in the east.

NAN Nandewar

Hills on Palaeozoic sediments; lithosols and earths; *Eucalyptus albens* woodlands; summer rainfall.

NCP Naracoorte Coastal Plain

A broad coastal plain of Tertiary and Quaternary sediments with a regular series of calcareous sand ridges separated by inter-dune swales closed limestone depressions and young volcanoes at Mount Gambier. Vegetation is dominated by heathy woodlands and mallee shrublands with wet heaths in the inter-dune swales. Extensively cleared for agriculture

NET New England Tableland

Elevated plateau of hills and plains on Palaeozoic sediments, granites and basalts; dominated by stringy bark/peppermint/box species, including *E. caliginosa*, *E. nova-anglica*, *E. melliodora* and *E. blakleyi*.

NK Northern Kimberley

Dissected plateau of Kimberley Basin. Savanna woodland of Woollybutt and Darwin Stringy bark over high Sorghum grasses and *Plectrachne schinzii* hummock grasses on shallow sandy soils on outcropping Proterozoic siliceous sandstone strata. Savanna woodlands on *Eucalyptus tectifica* - *E. grandiflora* alliance over high Sorghum grasses on red and yellow earths mantling basic Proterozoic volcanics. Riparian closed forests of paperbark trees and *Pandanus* occur along drainage lines. Extensive Mangal occurs in estuaries and sheltered embayments. Numerous small patches of monsoon rainforest are scattered through the district. Dry hot tropical, sub-humid, summer rainfall.

NNC NSW North Coast

Humid; hills, coastal plains and sand dunes; *Eucalyptus* - *Lophostemon confertus* tall open forests, *Eucalyptus* open forests and woodlands, sub-tropical rainforest often with *Araucaria cunninghamii* (complex notophyll and microphyll vine forest), *Melaleuca quinquenervia*. wetlands, and heaths.

NSS NSW South Western Slopes

An extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending through southern New South Wales to western Victoria. Vegetation consists of wet/damp sclerophyll forests, peppermint forests and box/ironbark woodlands. Extensively cleared for agriculture.

NUL Nullarbor

Tertiary limestone plain; subdued arid karst features. Bluebush - Saltbush steppe in central areas; low open woodlands of Myall over bluebush in peripheral areas, including *Myoporum platycarpum* and *E. oleosa* in the east and west. Arid Non-seasonal.

OVP Ord Victoria Plains

Level to gently undulating plains with scattered hills on Cambrian volcanics and Proterozoic sedimentary rocks; vertosols on plains and predominantly skeletal soils on hills; grassland with scattered Bloodwood and Snappy Gum with spinifex and annual grasses. Dry hot tropical, semi-arid summer rainfall. The lithological mosaic has three main components:

- (1) Abrupt Proterozoic and Phanerozoic ranges and scattered hills mantled by shallow sand and loam soils supporting *Triodia* hummock grasslands with sparse low trees.
- (2) Cambrian volcanics and limestones form extensive plains with short grass (*Enneapogon spp.*) on dry calcareous soils and medium-height grassland communities (*Astrebla* and *Dichanthium*) on cracking clays. Riparian forests of River Gums fringe drainage lines.
- (3) In the south-west, Phanerozoic strata expressed as often lateritised upland sandplains with sparse trees. This component recurs as the Sturt Plateau Region in central Northern Territory.

PCK Pine Creek

Foothill environments below and to the west of the western Arnhem Land sandstone massif. Its main defining feature is the highly mineraliferous Pine Creek Geosyncline, comprising Archaean granite and gneiss overlain by Palaeoproterozoic sediments. The major vegetation types are eucalypt tall open forests, typically dominated by Darwin woollybutt (*Eucalyptus miniata*) and Darwin stringybark (*E. tetradonta*), and

woodlands (dominated by a range of species including *E. grandifolia*, *E. latifolia*, *E. tintinnans*, *E. confertiflora* and *E. tectifera*), with smaller areas of monsoon rainforest patches, *Melaleuca* woodlands, riparian vegetation and tussock grasslands. Characteristic species include the granivorous birds Gouldian finch *Erythrura gouldii*, hooded parrot *Psephotus dissimilis* and partridge pigeon *Geophaps smithii*.

PIL Pilbara

There are four major components to the Pilbara Craton.

- (1) Hamersley. Mountainous area of Proterozoic sedimentary ranges and plateaux with Mulga low woodland over bunch grasses on fine textured soils and Snappy Gum over *Triodia brizoides* on skeletal sandy soils of the ranges.
- (2) The Fortescue Plains. Alluvial plains and river frontages. Salt marsh, mulga-bunch grass, and short grass communities on alluvial plains. River Gum woodlands fringe the drainage lines. This is the northern limit of Mulga (*Acacia aneura*).
- (3) Chichester. Archaean granite and basalt plains supporting shrub steppe characterised by *Acacia pyrifolia* over *Triodia pungens* hummock grasses. Snappy Gum tree steppes occur on ranges.
- (4) Roebourne. Quaternary alluvial plains with a grass savanna of mixed bunch and hummock grasses, and dwarf shrub steppe of *Acacia translucens* over *Triodia pungens*. Samphire, *Sporobolus* and Mangal occur on marine alluvial flats. Arid tropical with summer rain.

RIV Riverina

An ancient riverine plain and alluvial fans composed of unconsolidated sediments with evidence of former stream channels. The Murray and Murrumbidgee Rivers and their major tributaries, the Lachlan and Goulburn Rivers flow westwards across this plain. Vegetation consists of river red gum and black box forests, box woodlands, saltbush shrublands, extensive grasslands and swamp communities.

SB Sydney Basin

Mesozoic sandstones and shales; dissected plateaus; forests, woodlands and heaths; skeletal soils, sands and podzolics.

SCP South East Coastal Plain

Undulating Tertiary and Quaternary coastal plains and hinterlands occur in several distinct segments (Warrnambool Plain, Otway Plain and Gippsland Plain) rise up to 200 metres in altitude and extend from Tyrendarra in the west to Lakes Entrance in the east and including Geelong, eastern Melbourne and the Mornington Peninsula. The area has a temperate climate with rainfall varying from about 500 to 1100 mm, typically with higher rainfall in winter. Adjacent areas of higher altitude (e.g. the Otway and Strzelecki Ranges) produce rainshadow effects in some parts of the area.

The Warrnambool Plain is dominated by nutrient deficient soils over low calcareous dune formations and the distinctive cliffed coastline. Much of the limestone has been overlain by more recent sediments, and between the limestone dunes, areas of swamplands are characterised by highly fertile peats and seasonal inundation. The area east of Warrnambool is characterised by deeper soils of volcanic origins overlying limestone, which are dissected by streams. The Otway Plain includes coastal plains, river valleys and foothills from the Bellarine Peninsula west to Princetown. A small isolated component at Werribee, on the western shore of Port Phillip Bay, is included. The Gippsland Plain includes lowland coastal and alluvial plains characterised by generally flat to gently undulating terrain. The coastline is varied and includes sandy beaches backed by dunes and cliffs, and shallow inlets with extensive mud and sand flats.

The vegetation includes lowland forests, open forests with shrubby or heathy understoreys, grasslands and grassy woodlands, heathlands, shrublands, freshwater and coastal wetlands, mangrove scrubs, saltmarshes, dune scrubs and coastal tussock grasslands. Extensively cleared for agriculture.

SEC South East Corner

A series of deeply dissected near coastal ranges composed of Devonian granites and Palaeozoic sediments, inland of a series of gently undulating terraces (piedmont downs) composed of Tertiary sediments and flanked by Quaternary coastal plains, dune fields and inlets. The regional climate is strongly influenced by the Tasman Sea and the close proximity of the coast to the Great Dividing Range. Vegetation consists of high elevation woodlands, wet and damp sclerophyll forests interspersed with rain-shadow woodlands in the Snowy River Valley. Lowland and coastal sclerophyll forests, woodlands, warm temperate rainforest and coastal communities occur in the lower areas.

SEQ South Eastern Queensland

Metamorphic and acid to basic volcanic hills and ranges (Beenleigh, D'Aguilar, Gympie, Yarraman Blocks) sediments of the Moreton, Nambour and Maryborough Basins, extensive alluvial valleys and Quaternary coastal deposits including high dunes on the sand islands such as Fraser Island. Humid. Eucalyptus-Lophostemon-Syncarpia tall open forests, Eucalyptus open forests and woodlands, sub-tropical rainforests often with *Araucaria cunninghamii* emergents and small areas of cool temperate rainforest dominated by *Nothofagus moorei* and semi-evergreen vine thickets, *Melaleuca quinquenervia* wetlands and Banksia low woodlands, heaths and mangrove/saltmarsh communities.

SEH South Eastern Highlands

Steep dissected and rugged ranges extending across southern and eastern Victoria and southern NSW. Geology predominantly Palaeozoic rocks and Mesozoic rocks. Vegetation predominantly wet and dry sclerophyll forests, woodland, minor cool temperate rainforest and minor grassland and herbaceous communities. Large areas, particularly in the Box-Ironbark Forests, were felled for fuel and timber for the mines during the gold rushes in Victoria. Large areas have also been cleared in NSW for grazing or plantations.

SSD Simpson Strzelecki dune fields

Arid dune fields and sandplains with sparse shrubland and spinifex hummock grassland, and cane grass on deep sands along dune crests. Large salt lakes, notably Lake Eyre and many clay pans are dispersed amongst the dunes. Several significant arid rivers terminate at Lake Eyre, Cooper Creek and Warburton River. They are fringed with coolibah and redgum woodlands.

STP Stony Plains

Arid stony silcrete tablelands and gibber and gypsum plains with sparse low chenopod shrublands on duplex soils and calcareous earths, dissected by large arid drainage systems with coolibah and redgum on cracking clays along riverbanks of numerous creeks and rivers.

STU Sturt Plateau

Gently undulating plains on lateritised Cretaceous sandstones; neutral sandy red and yellow earths; variable-barked Bloodwood woodland with spinifex understorey.

SWA Swan Coastal Plain

Low lying coastal plain, mainly covered with woodlands. It is dominated by Banksia or Tuart on sandy soils, *Allocasuarina obesa* on outwash plains, and paperbark in swampy areas. In the east, the plain rises to duricrusted Mesozoic sediments dominated by Jarrah woodland. Warm Mediterranean. Three phases of marine sand dune development provide relief. The outwash plains, once dominated by *A. obesa*-marri woodlands and *Melaleuca* shrublands, are extensive only in the south.

TAN Tanami

Mainly red Quaternary sandplains overlying Permian and Proterozoic strata which are exposed locally as hills and ranges. The sandplains support mixed shrub steppes of *Hakea suberea*, desert bloodwoods, acacias and grevilles over *Triodia pungens* hummock grasslands. Wattle scrub over *T. pungens* hummock

grass communities occur on the ranges. Alluvial and lacustrine calcareous deposits occur throughout. In the north they are associated with Sturt Creek drainage, and support *Crysopogon* and *Iseilema* short-grasslands often as savannas with River Gum. Arid tropical with summer rain.

TCH Tasmanian Central Highlands

Perhumid cool to cold high plateau surface and rugged mountain ranges to the west formed by Jurassic dolerite and Tertiary basalts, with skeletal soils to alluvium in valleys, and humid cool to cold lower plateau surface underlain by Jurassic dolerite, Permo-Triassic sediments and Tertiary basalts, with sandy to clay loam soils. Vegetation ranging from dry sclerophyll woodlands and wet sclerophyll forest on the lower plateau to alpine complexes and coniferous forest patches in fertile, fire protected situations on the higher plateau. Land use is a combination of conservation, forestry, agriculture (grazing) and water catchment.

TNM Tasmanian Northern Midlands

Dry subhumid cool inland lowland plain underlain by Tertiary basalts, Jurassic dolerite, Permo-Triassic sandstones, and recent alluvium lying in the Tamar. Vegetation comprises grasslands and grassy woodlands on deep loams and alluvium and dry sclerophyll forest and woodland on, Tertiary. Grasslands and woodlands have been reduced to remnants. Land use is primarily agriculture (grazing) with some forestry. Extensively cleared for agriculture.

TNS Tasmanian Northern Slopes

Humid warm coastal plains and deeply dissected lowland hills rising from Tasmania's central north coast to the foot of the Central Highlands in a rolling hilly plateau. This is a geologically diverse region comprising complexes of Cambrian and Pre Cambrian metasediments, basic-intermediate volcanics, and post-Carboniferous sediments with soils ranging from deep basaltic loams to acid sandy coastal soils. Vegetation is wet and dry sclerophyll forest with coastal heaths and some rainforest which progressively replaces the sclerophyll forest in the west. Native vegetation has been replaced by improved pasture and cropland throughout the lowlands. Land use is primarily forestry and agriculture (cropping).

TSE Tasmanian South East

Subhumid cool to subhumid warm coastal plains on a highly indented coastline, bordered inland by low mountain ranges formed from Jurassic dolerite and Permo-Triassic sediments. Soils predominantly clay to sandy loams. Vegetation is predominantly dry sclerophyll forest, with patches of wet sclerophyll forest, relict rainforest, coastal heath and dry coniferous forest. Extensive areas have been converted to improved pasture and cropland. Land use primarily agriculture (grazing) and forestry.

TSR Tasmanian Southern Ranges

Humid cool mountainous tract of central southern Tasmania. Permo-Triassic sediments and Jurassic dolerite, mantled with sandy to clay loams. Heavily forested, grading from mixed forest, wet sclerophyll forest and patches of rainforest in the uplands to dry sclerophyll forest on the coastal lowlands. Land use primarily forestry and agriculture (grazing and cropping).

TWE Tasmanian West

Perhumid cold lowlands, low hills and low ranges, comprising most of coastal and inland western Tasmania. Folding and subsequent erosion has resulted in rugged dissected inland ranges dominated by Precambrian and Cambrian rocks supporting oligotrophic acid peat soils or shallow organic horizons over deep mineral profiles. From 300 metres elevation a discontinuous coastal plain slopes westward to the ocean. Vegetation is a complex mosaic of rainforest (*Nothofagus*), buttongrass (*Gymnoschoenus sphaerocephalus*) moorlands and *Eucalyptus nitida* scrub. Principal land uses are conservation, mining and forestry.

TIW Tiwi Cobourg

This coastal region includes Australia's second and fifth largest islands (Melville and Bathurst Island in the

Tiwi island group), Croker Island and the adjacent Cobourg Peninsula. Coastal vegetation includes some mangroves and saline flats, although this bioregion lacks the large rivers which influence vegetation patterning in other coastal regions. Most of this bioregion is covered by tall eucalypt open forests, typically dominated by Darwin woollybutt (*Eucalyptus miniata*), Darwin stringybark (*E. tetradonta*) and Melville Island bloodwood (*E. nesophila*), but often with northern cypress-pine *Callitris intratropica* and the tall palm *Gronophyllum ramsayi* co-dominant. The Tiwi Islands support a relatively high density and total area of monsoon rainforest patches, with distinctive species composition. There are also substantial areas there of a distinctive "treeless plain" vegetation. This bioregion is of low relief, with laterite and Cretaceous sandstone the dominant substrates. The Tiwi Islands support about 20 endemic plant and vertebrate animal taxa. The bioregion contains some important marine turtle breeding sites, and a Ramsar wetland on the Cobourg Peninsula. The bioregion is entirely Aboriginal land.

VB Victoria Bonaparte

Phanerozoic strata of the Bonaparte Basin in the north-western part are mantled by Quaternary marine sediments supporting Samphire - *Sporobolus* grasslands and mangal, and by red earth plains and black soil plains with an open savanna of high grasses. Outcrops of Devonian limestone karst in the west support tree steppe and vine thicket. Plateaux and abrupt ranges of Proterozoic sandstone, known as the Victoria Plateau, occur in the south and east, and are partially mantled by skeletal sandy soils with low tree savannas and hummock grasslands. In the south east are limited areas of gently undulating terrain on a variety of sedimentary rocks supporting low Snappy Gum over hummock grasslands and also of gently sloping floodplains supporting *Melaleuca minutifolia* low woodland over annual sorghums. Dry hot tropical, semi-arid summer rainfall.

VM Victorian Midlands

An extensive area of foothills and isolated ranges comprising the lower inland slopes of the Great Dividing Range extending from North-eastern Victoria to Casterton in Western Victoria.

Large areas of the region were cleared during the gold rushes of the late nineteenth and early twentieth centuries so today it is characterised by patches of woodland and forest interspersed with a rural landscape with modified pastures and some cropping. Vegetation includes most of the Box Ironbark Woodland in Victoria, as well as substantial areas of Eucalyptus forests and woodlands with a grassy ground layer.

The flatter and more fertile areas of the Victorian Midlands have been substantially cleared for agriculture, principally sheep and beef cattle grazing. Timber harvesting remains an important land use in the Victorian Midlands. Much of the forests were extensively cut for timber to meet the demands of the gold mining industry of last century. In the less fertile parts of the Victorian Midlands, substantial areas of native vegetation remain today in good condition, for example, the Grampians National Park.

VVP Victorian Volcanic Plain

An extensive undulating basaltic plain in south-western Victoria, stretching from Melbourne west to Portland, south to Colac and north to Beaufort. It is characterised by vast open areas of grasslands, small patches of open woodland, stony rises denoting old lava flows, the low peaks of long extinct volcanoes dotting the landscape and numerous scattered large shallow lakes with extensive wetlands.

The grassland communities are floristically rich, usually dominated by Kangaroo Grass with a wide variety of perennial herbs. The open and fertile grassy plains were one of the first areas settled for agriculture in Victoria and native grasslands are now reduced to a few thousand hectares in extent. The major land use is agriculture, especially sheep and cattle grazing and cropping.

WAR Warren

Dissected undulating country of the Leeuwin Complex and Albany Orogen with loamy soils supporting Karri forest, laterites supporting Jarrah-Marri forest, leached sandy soils in depressions and plains supporting

paperbark/sedge swamps, and Holocene marine dunes with *Agonis flexuosa* woodlands. Moderate Mediterranean.

WT Wet Tropics

The bioregion is dominated by rugged rainforested mountains, including the highest in Queensland Mt Bartle Frere (1622m). It also includes extensive plateau areas along its western margin, as well as low lying coastal plains. The most extensive lowlands are in the south, associated with the floodplains of the Tully and Herbert Rivers. Most of the bioregion drains to the coral sea from small coastal catchments, but higher western areas drain in the south into the Burdekin River, and in the north into tributaries of the Mitchell River. The region contains extensive areas of tropical rainforest, plus beach scrub, tall open forest, open forest, mangrove and *Melaleuca* woodland communities.

YAL Yalgoo

This region is an interzone between South-western Bioregions and Murchison. It is characterised by low woodlands to open woodlands of *Eucalyptus*, *Acacia* and *Callitris* on red sandy plains of the Western Yilgarn Craton and southern Carnarvon Basin. The latter has a basement of Phanerozoic sediments. This Bioregion has been extended westwards to the boundary of the South-west Botanical Province, so that it now includes the Toolong Plateau of the southern Carnarvon Basin.

Semi-arid to arid, warm, Mediterranean climate. Mulga, *Callitris-E. salubris*, and Bowgada open woodlands and scrubs on earth to sandy-earth plains in the western Yilgarn Craton. Rich in ephemerals. Arid to semi-arid warm Mediterranean.