

# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 66: Low Rises Woodland

#### Description:

Eucalypt woodland to 15 m tall on elevated plains and low rises with a diverse shrub understorey and grassy field layer. Occurs in a range of environmental settings that have resulted in well-drained surface soils mantling clay sub-soils.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	60 cm	20/ha
<i>Allocasuarina</i> spp.	40 cm	
<i>Callitris</i> spp.	40 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
20%	<i>Eucalyptus melliodora</i>	Yellow Gum
	<i>Eucalyptus microcarpa</i>	Grey Box
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine
	<i>Callitris glaucophylla</i>	White Cypress-pine
	<i>Allocasuarina luehmannii</i>	Buloke

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	2	5%	T
Medium Shrub	5	15%	MS
Small Shrub	3	5%	SS
Large Herb	1	1%	LH
Medium Herb	3	5%	MH
Small or Prostrate Herb	2	1%	SH
Medium to Small Tufted Graminoid	7	25%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>70%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Pittosporum angustifolium</i>	Weeping Pittosporum
T	<i>Myoporum platycarpum</i>	Sugarwood
MS	<i>Acacia pycnantha</i>	Golden Wattle
MS	<i>Hakea tephrosperma</i>	Needlewood
MS	<i>Bursaria spinosa</i>	Sweet Bursaria
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
SS	<i>Eutaxia microphylla</i>	Common Eutaxia
SS	<i>Olearia pimeleoides</i>	Pimelea Daisy-bush
MH	<i>Vittadinia cuneata</i>	Fuzzy New Holland Daisy
SH	<i>Maireana enchylaenoides</i>	Wingless Bluebush
SH	<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia
SH	<i>Oxalis perennans</i>	Grassland Wood-sorrel
SH	<i>Sida corrugata</i>	Variable Sida
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Elymus scaber</i> var. <i>scaber</i>	Common Wheat-grass
MTG	<i>Enteropogon acicularis</i>	Windmill Grass
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass
SC	<i>Clematis microphylla</i>	Small-leaved Clematis

# EVC 66: Low Rises Woodland - Murray Mallee bioregion

## Recruitment:

Continuous

## Organic Litter:

15% cover

## Logs:

20m/0.1 ha.

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i>	Olive	high	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Centaurium tenuiflorum</i>	Slender Centaury	high	low
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Opuntia robusta</i>	Wheel Cactus	high	high
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	high	low
MH	<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	high	low
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Petrorhagia velutina</i>	Velvety Pink	high	low
MH	<i>Oxalis pes-caprae</i>	Soursob	high	high
MTG	<i>Briza minor</i>	Lesser Quaking-grass	high	low
MTG	<i>Briza maxima</i>	Large Quaking-grass	high	low
MTG	<i>Romulea rosea</i>	Onion Grass	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MNG	<i>Aira elegantissima</i>	Delicate Hair-grass	high	low
MNG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high
MNG	<i>Vulpia myuros</i> f. <i>myuros</i>	Rat's-tail Fescue	high	high
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	low
MNG	<i>Bromus rubens</i>	Red Brome	high	high
TTG	<i>Poa bulbosa</i>	Bulbous Meadow-grass	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 86: Woorinen Sands Mallee

#### Description:

Mallee shrubland to 7 m tall, typically supporting a hummock grass (*Triodia* spp.) dominated understorey. This EVC could be considered intermediate between the heavier soil mallee woodlands and the lighter sandy soil mallee vegetation predominant on Lowan (siliceous) sand.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	15 cm	30/ha

#### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus dumosa</i>	Dumosa Mallee
	<i>Eucalyptus leptophylla</i>	Slender-leaf Mallee
	<i>Eucalyptus socialis</i>	Grey Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	4	5%	MS
Small Shrub	2	10%	SS
Prostrate Shrub	1	5%	PS
Medium Herb	6	5%	MH
Small or Prostrate Herb*	6	5%	SH
Hummock Grass	1	15%	HG
Medium to Small Tufted Graminoid	3	5%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover 65%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Melaleuca lanceolata</i> ssp. <i>lanceolata</i>	Moonah
MS	<i>Myoporum platycarpum</i>	Sugarwood
MS	<i>Dodonaea bursariifolia</i>	Small Hop-bush
MS	<i>Acacia wilhelmiana</i>	Dwarf Nealie
SS	<i>Sclerolaena parviflora</i>	Mallee Copperburr
SS	<i>Halgania cyanea</i>	Rough Halgania
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Westringia rigida</i>	Stiff Westringia
LH	<i>Helichrysum leucopsidium</i>	Satin Everlasting
LH	<i>Waitzia acuminata</i> var. <i>acuminata</i>	Orange Immortelle
MH	<i>Podolepis capillaris</i>	Invisible Daisy
MH	<i>Goodenia willisiana</i>	Sandhill Goodenia
MH	<i>Vittadinia dissecta</i>	Dissected New Holland Daisy
MH	<i>Podothea angustifolia</i>	Sticky Long-heads
SH	<i>Actinobole uliginosum</i>	Flannel Cudweed
SH	<i>Calotis hispidula</i>	Hairy Burr-daisy
SH	<i>Crassula sieberiana</i>	Australian Stonecrop
SH	<i>Ptilotus seminudis</i>	Rabbit-tails
HG	<i>Triodia scariosa</i>	Porcupine Grass
MTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lomandra effusa</i>	Scented Mat-rush
MTG	<i>Lomandra leucocephala</i> ssp. <i>robusta</i>	Woolly Mat-rush
MTG	<i>Austrostipa elegantissima</i>	Feather Spear-grass

# EVC 86: Woorinen Sands Mallee - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

15% cover

**Logs:**

10m/0.1 ha. (note: large log class does not apply)

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i>	Olive	high	high
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Opuntia</i> spp.	Prickly Pear	high	high
MH	<i>Gazania linearis</i>	Gazania	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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## EVC/Bioregion Benchmark for Vegetation Quality Assessment

### Murray Mallee bioregion

#### EVC 87: Lowan Sands Mallee

##### Description:

Low woodland to mallee shrubland to 7 m tall, commonly dominated by *Eucalyptus arenacea* with a heathy understorey. Found on deep to moderately deep siliceous sands of aeolian origin.

##### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus arenacea</i>	Desert Stringybark
	<i>Eucalyptus incrassata</i>	Yellow Mallee

##### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	5	35%	MS
Small Shrub	7	30%	SS
Prostrate Shrub	1	1%	PS
Medium Herb	4	10%	MH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	5	5%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
<b>Total understorey projective foliage cover</b>			<b>60%</b>

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Leptospermum myrsinoides</i>	Heath Tea-tree
MS	<i>Banksia marginata</i>	Silver Banksia
MS	<i>Callitris rhomboidea</i>	Oyster Bay Cypress-pine
MS	<i>Allocasuarina pusilla</i> s.l.	Dwarf Sheoak
SS	<i>Hibbertia sericea</i> s.l.	Silky Guinea-flower
SS	<i>Isopogon ceratophyllus</i>	Horny Cone-bush
SS	<i>Hibbertia virgata</i>	Twiggy Guinea-flower
SS	<i>Phyllota pleurandroides</i>	Heathy Phyllota
MH	<i>Goodenia geniculata</i>	Bent Goodenia
MH	<i>Argentipallium obtusifolium</i>	Blunt Everlasting
MH	<i>Gonocarpus tetragynus</i>	Common Raspwort
MH	<i>Wahlenbergia gracilentia</i> s.l.	Annual Bluebell
LTG	<i>Xanthorrhoea australis</i>	Austral Grass-tree
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Lepidosperma carphoides</i>	Black Rapier-sedge
MTG	<i>Neurachne alopecuroides</i>	Fox-tail Mulga-grass
MTG	<i>Lomandra juncea</i>	Desert Mat-rush
MNG	<i>Hypolaena fastigiata</i>	Tassel Rope-rush
MNG	<i>Lepidobolus drapetocoleus</i>	Scale Shedder
TTG	<i>Centrolepis strigosa</i> ssp. <i>strigosa</i>	Hairy Centrolepis
TTG	<i>Schoenus breviculmis</i>	Matted Bog-sedge
SC	<i>Cassytha glabella</i>	Slender Dodder-laurel
SC	<i>Cassytha pubescens</i> s.s.	Downy Dodder-laurel

# EVC 87: Lowan Sands Mallee - Murray Mallee bioregion

**Recruitment:**

Episodic/Fire. Desirable period between disturbances is 20 years.

**Organic Litter:**

5% cover

**Logs:**

5 m/0.1 ha. (note: large log class is not applicable)

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MNG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 88: Heathy Mallee

#### Description:

Low mallee shrubland to low open mallee shrubland to 4 m with a dense to moderately dense understorey of heathy shrubs. Occurs on infertile siliceous Lowan Sand on dunefields and sandplains. This is a prominent EVC in the central Big Desert.

#### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus incrassata</i>	Yellow Mallee
	<i>Eucalyptus leptophylla</i>	Slender-leaf Mallee
	<i>Eucalyptus arenacea</i>	Desert Stringybark

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	6	30%	MS
Small Shrub	7	20%	SS
Large Herb	2	1%	LH
Medium Herb	3	5%	MH
Hummock Grass	1	5%	HG
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>55%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Calytrix tetragona</i>	Common Fringe-myrtle
MS	<i>Hakea mitchellii</i>	Desert Hakea
MS	<i>Leptospermum coriaceum</i>	Mallee Tea-tree
MS	<i>Babingtonia behrii</i>	Broom Baeckea
SS	<i>Hibbertia riparia</i>	Erect Guinea-flower
SS	<i>Baeckea crassifolia</i>	Desert Baeckea
SS	<i>Stenanthemum leucophractum</i>	White Cryptandra
SS	<i>Cryptandra tomentosa</i>	Prickly Cryptandra
LH	<i>Helichrysum leucopsidium</i>	Satin Everlasting
MH	<i>Goodenia geniculata</i>	Bent Goodenia
MH	<i>Goodenia robusta</i>	Woolly Goodenia
HG	<i>Triodia scariosa</i>	Porcupine Grass
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Lepidosperma carphoides</i>	Black Rapier-sedge
MTG	<i>Lomandra juncea</i>	Desert Mat-rush
MTG	<i>Lomandra collina</i>	Pale Mat-rush
MNG	<i>Lepidobolus drapetocoleus</i>	Scale Shedder
MNG	<i>Hypolaena fastigiata</i>	Tassel Rope-rush
TTG	<i>Schoenus breviculmis</i>	Matted Bog-sedge
SC	<i>Cassytha glabella</i>	Slender Dodder-laurel
SC	<i>Billardiera cymosa s.l.</i>	Sweet Apple-berry

# EVC 88: Heathy Mallee - Murray Mallee bioregion

**Recruitment:**

Episodic/Fire. Desirable period between disturbances is 20 years.

**Organic Litter:**

10% cover

**Logs:**

5m/0.1 ha. (note: large log class does not apply)

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	high
MTG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 89: Dunefield Heathland

#### Description:

Treeless heathland or low shrubland to 2 m tall. Very scattered small mallee form trees may be present. In recently burnt stands (less than 20 years since fire) an open sub-shrub and ground stratum is also common. Occurs on deep siliceous sand on minor dunes and undulating sandplains where siliceous Lowan Sand of coastal origins has accumulated to some depth.

#### Life Forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	6	50%	MS
Small Shrub	6	20%	SS
Medium Herb	4	5%	MH
Hummock Grass	1	1%	HG
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>60%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Leptospermum myrsinoides</i>	Heath Tea-tree
MS	<i>Banksia marginata</i>	Silver Banksia
MS	<i>Callitris verrucosa</i>	Scrub Pine
MS	<i>Hakea mitchellii</i>	Desert Hakea
SS	<i>Hibbertia riparia</i>	Erect Guinea-flower
SS	<i>Hibbertia virgata</i>	Twiggy Guinea-flower
SS	<i>Spyridium subochreatum</i> var. <i>subochreatum</i>	Velvet Spyridium
SS	<i>Leucopogon woodsii</i>	Nodding Beard-heath
MH	<i>Goodenia geniculata</i>	Bent Goodenia
MH	<i>Podotheca angustifolia</i>	Sticky Heads
MH	<i>Comesperma calymega</i>	Blue-spike Milkwort
MH	<i>Argentipallium obtusifolium</i>	Blunt Everlasting
HG	<i>Triodia scariosa</i>	Porcupine Grass
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Lepidosperma carphoides</i>	Black Rapier-sedge
MTG	<i>Lomandra juncea</i>	Desert Mat-rush
MTG	<i>Lomandra leucocephala</i> ssp. <i>robusta</i>	Woolly Mat-rush
MNG	<i>Lepidobolus drapetocoleus</i>	Scale Shedder
MNG	<i>Hypolaena fastigiata</i>	Tassel Rope-rush
TTG	<i>Schoenus breviculmis</i>	Matted Bog-sedge
SC	<i>Cassytha glabella</i>	Slender Dodder-laurel

#### Recruitment:

Episodic/Fire. Desirable period between disturbances is 20 years.

#### Organic Litter:

5% cover

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	high
MTG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high

# EVC 89: Dunefield Heathland – Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 91: Loamy Sands Mallee

#### Description:

Semi-arid low mallee shrubland to 5 m tall, typically supporting scattered shrubs above a hummock grass field layer. Typically occurs on deep drifts of Lowan sands in the lee of ridge systems or occupying dune crests and swales in the parabolic and irregularly arranged dune in the Central Mallee and Sunset Country.

#### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus incrassata</i>	Yellow Mallee
	<i>Eucalyptus leptophylla</i>	Slender-leaf Mallee
	<i>Eucalyptus socialis</i>	Grey Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	5	20%	MS
Small Shrub	5	10%	SS
Large Herb	2	1%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb	2	1%	SH
Hummock Grass	1	5%	HG
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>60%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Callitris verrucosa</i>	Scrub Cypress-pine
MS	<i>Leptospermum coriaceum</i>	Mallee Tea-tree
MS	<i>Acacia ligulata</i>	Sandhill Wattle
MS	<i>Bertya mitchellii</i>	Mitchell Bertya
SS	<i>Hibbertia riparia</i>	Erect Guinea-flower
SS	<i>Hibbertia virgata</i>	Twiggy Guinea-flower
SS	<i>Halgania cyanea</i>	Rough Halgania
SS	<i>Brachyloma ericoides</i> ssp. <i>ericoides</i>	Brush Heath
LH	<i>Helichrysum leucopsidium</i>	Satin Everlasting
MH	<i>Podothea angustifolia</i>	Sticky Long-heads
MH	<i>Millotia tenuifolia</i> var. <i>tenuifolia</i>	Soft Millotia
MH	<i>Glischrocaryon behrii</i>	Golden Pennants
MH	<i>Podolepis capillaris</i>	Invisible Plant
SH	<i>Actinobole uliginosum</i>	Flannel Cudweed
SH	<i>Millotia muelleri</i>	Common Bow-flower
SH	<i>Calotis hispidula</i>	Hairy Burr-daisy
HG	<i>Triodia scariosa</i>	Porcupine Grass
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lomandra leucocephala</i> ssp. <i>robusta</i>	Woolly Mat-rush
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Lomandra collina</i>	Pale Mat-rush
SC	<i>Thysanotus patersonii</i>	Twining Fringe-lily

# EVC 91: Loamy Sands Mallee - Murray Mallee bioregion

**Recruitment:**

Episodic/Fire. Desirable period between disturbances is 20 years.

**Organic Litter:**

15% cover

**Logs:**

5m/0.1 ha. (note: large log class does not apply)

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MNG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 93: Sandstone Ridge Shrubland (*syn.* Broombush Mallee)

#### Description:

Low open mallee to 3 m tall typically with a tall shrubby understorey, or shrubland with scattered emergent mallees. A good field character for this EVC is the dominance or co-dominance of the tall shrub *Melaleuca uncinata* in shrubland or as an understorey shrub in Mallee vegetation. Confined to the crests of outcropping Parilla sandstone ridges and also where these ridges are at least partially obscured by a shallow mantle of Lowan sand.

+ mallee only component (ignore when assessing shrubland areas and standardise final score as appropriate)

#### Tree Canopy Cover<sup>+</sup>:

%cover	Character Species	Common Name
15%	<i>Eucalyptus incrassata</i>	Yellow Mallee
	<i>Eucalyptus leptophylla</i>	Slender-leaf Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	4	40%	MS
Small Shrub	4	5%	SS
Medium Herb	2	5%	MH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Tiny Tufted Graminoid	1	1%	TTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	15%	S/C
<b>Total understorey projective foliage cover</b>		<b>60%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Melaleuca uncinata</i>	Broombush
MS	<i>Babingtonia behrii</i>	Broom Baeckea
MS	<i>Callitris verrucosa</i>	Scrub Cypress-pine
MS	<i>Hakea mitchellii</i>	Desert Hakea
SS	<i>Hibbertia riparia</i>	Erect Guinea-flower
SS	<i>Eutaxia microphylla</i>	Common Eutaxia
SS	<i>Hibbertia virgata</i>	Twiggy Guniea-flower
SS	<i>Micromyrtus ciliata</i>	Heath-myrtle
MH	<i>Helichrysum leucopsidium</i>	Satin Everlasting
MH	<i>Glischrocaryon behrii</i>	Golden Pennants
MH	<i>Podothea angustifolia</i>	Sticky Long-heads
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Neurachne alopecuroidea</i>	Fox-tail Mulga-grass
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
SC	<i>Thysanotus patersonii</i>	Twining Fringe-lily
SC	<i>Billardiera cymosa</i> s.l.	Sweet Apple-berry

#### Recruitment:

Episodic/Fire. Desirable period between disturbances is 20 years.

#### Organic Litter:

10% cover

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MTG	<i>Pentastichis airoides</i> subsp. <i>airoides</i>	False Hair-grass	high	high
MTG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high



# EVC 93: Sandstone Ridge Shrubland (*syn.* Broombush Mallee) - Murray Mallee Bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 95: Red Swale Mallee

#### Description:

Dense to sometimes whipstick form of mallee shrubland to 6 m tall with a typically sparse understorey. This EVC does not necessarily occur in dune swales, however it is often found on low points in the jumbled or parabolic dunefields of the Lowan where the underlying Parilla ridges may be "exposed" and are mantled by a thin layer of aeolian material.

#### Tree Canopy Cover:

% cover	Character Species	Common Name
30%	<i>Eucalyptus dumosa</i>	Dumosa Mallee
	<i>Eucalyptus calycogona</i>	Red Mallee
	<i>Eucalyptus leptophylla</i>	Slender-leaf Mallee
	<i>Eucalyptus socialis</i>	Grey Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	4	10%	MS
Small Shrub	3	5%	SS
Large Herb	1	1%	LH
Medium Herb	7	10%	MH
Small or Prostrate Herb	2	1%	SH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	20%	S/C
<b>Total understorey projective foliage cover</b>		<b>55%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Dodonaea bursariifolia</i>	Small Hop-bush
MS	<i>Beyeria opaca</i>	Dark Turpentine Bush
MS	<i>Melaleuca uncinata</i>	Broombush
SS	<i>Westringia rigida</i>	Stiff Westringia
MH	<i>Chenopodium desertorum</i>	Frosted Goosefoot
MH	<i>Stenopetalum lineare</i>	Narrow Thread-petal
MH	<i>Crassula colorata</i>	Dense Crassula
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MTG	<i>Lepidosperma viscidum</i>	Sticky Sword-sedge
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass

#### Recruitment:

Episodic/Fire. Desirable period between disturbances is 30 years.

#### Organic Litter:

15% cover

#### Logs:

5m/0.1 ha (note: large log class does not apply)

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i>	Olive	high	high
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Opuntia</i> spp.	Cactus	high	high
MH	<i>Gazania linearis</i>	Gazania	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

# EVC 95: Red Swale Mallee - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 96: Ridged Plains Mallee

#### Description:

Open, quite grassy mallee woodland to 10 m tall, typical of the gently undulating "plains" of the Wimmera and Southern Mallee. Soils are somewhat variable but are typically duplex with grey or brown sandy clay loam or clay loam topsoils of aeolian origin.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	30 cm	15/ha
<i>Allocasuarina luehmannii</i>	40 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
10%	<i>Eucalyptus dumosa</i>	Dumosa Mallee
	<i>Eucalyptus behriana</i>	Bull Mallee
	<i>Eucalyptus porosa</i>	Black Mallee-box
	<i>Allocasuarina luehmannii</i>	Buloke

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	3	5%	MS
Small Shrub	3	10%	SS
Prostrate Shrub	1	1%	PS
Large Herb	2	5%	LH
Medium Herb*	5	10%	MH
Small or Prostrate Herb*	5	15%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	1%	LNG
Medium to Small Tufted Graminoid	3	20%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	20%	S/C

\* Largely seasonal lifeform

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Acacia melvillei</i>	Myall
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
MS	<i>Eremophila longifolia</i>	Berrigan
SS	<i>Maireana brevifolia</i>	Short-leaf Bluebush
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Rhagodia spinescens</i>	Hedge Saltbush
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
PS	<i>Atriplex semibaccata</i>	Berry Saltbush
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Maireana enchylaenoides</i>	Wingless Bluebush
MH	<i>Maireana excavata</i>	Bottle Bluebush
MH	<i>Maireana enchylaenoides</i>	Wingless Bluebush
SH	<i>Chenopodium desertorum</i>	Frosted Goosefoot
SH	<i>Oxalis perennans</i>	Grassland Wood-sorrel
SH	<i>Brachyscome lineariloba</i>	Hard-head Daisy
SH	<i>Hyalosperma</i> spp.	Sunray
LTG	<i>Austrostipa aristiglumis</i>	Plains Grass
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MTG	<i>Austrostipa scabra</i>	Rough Spear-grass
LNG	<i>Austrostipa platychaeta</i>	Flat-awned Spear-grass
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass

# EVC 96: Ridged Plains Mallee - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

5% cover

**Logs:**

5m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	<i>Critesion murinum</i>	Barley-grass	high	low
MTG	<i>Bromus diandrus</i>	Great Brome	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MH	<i>Marrubium vulgare</i>	Horehound	high	high
MNG	<i>Vulpia</i> spp.	Fescue	high	low
MS	<i>Lycium ferocissimum</i>	Boxthorn	low	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 97: Semi-arid Woodland

#### Description:

Non-eucalypt woodland or open forest to 12 m tall, of low rainfall areas. Occurs in a range of somewhat elevated positions not subject to flooding or inundation. The surface soils are typically light textured loamy sands or sandy loams.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Casuarina</i> spp.	40 cm	20/ha
<i>Allocasuarina</i> spp.	40 cm	
<i>Callitris</i> spp.	40 cm	
<i>Myoporum platycarpum</i>	35 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
20%	<i>Casuarina pauper</i>	Belah
	<i>Allocasuarina luehmannii</i>	Buloke
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine
	<i>Myoporum platycarpum</i>	Sugarwood

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	5	15%	MS
Small Shrub	5	20%	SS
Large Herb*	2	5%	LH
Medium Herb*	7	5%	MH
Small or Prostrate Herb*	2	5%	SH
Medium to Small Tufted Graminoid	2	10%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	20%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover 75%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Alectryon oleifolius</i> ssp. <i>canescens</i>	Cattle Bush
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
MS	<i>Hakea tephrosperma</i>	Hooked Needlewood
MS	<i>Hakea leucoptera</i> ssp. <i>leucoptera</i>	Silver Needlewood
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Olearia pimeleoides</i>	Pimelea Daisy-bush
SS	<i>Rhagodia spinescens</i>	Hedge Saltbush
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Vittadinia dissecta</i> s.l.	Dissected New Holland Daisy
MH	<i>Calandrinia eremaea</i>	Small Purslane
MH	<i>Crassula colorata</i>	Dense Crassula
SH	<i>Actinobole uliginosum</i>	Flannel Cudweed
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MTG	<i>Austrostipa</i> spp.	Spear-grass
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass

# EVC 97: Semi-arid Woodland - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

20% cover

**Logs:**

20m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Reichardia tingitana</i>	Reichardia	high	low
MH	<i>Silene</i> spp.	Catchfly	high	high
SH	<i>Medicago minima</i>	Little Medic	high	high
MTG	<i>Schismus barbatus</i>	Arabian Grass	high	high
MTG	<i>Pentaschistis airoides</i> ssp. <i>airoides</i>	False Hair-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	high
MNG	<i>Critesion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 98: Semi-arid Chenopod Woodland

#### Description:

Sparse, low non-eucalypt woodland to 12 m tall of the arid zone with a tall open chenopod shrub-dominated understorey to a treeless, tall chenopod shrubland to 3 m tall. This EVC may occur as either a woodland (typically with a very open structure but tree cover >10%) or a shrubland (tree cover <10%) with trees as an occasional emergent.

+ woodland only components (ignore when assessing shrubland areas and standardise final score as appropriate)

#### Large trees<sup>+</sup>:

Species	DBH(cm)	#/ha
<i>Casuarina pauper</i>	40 cm	15/ha
<i>Allocasuarina luehmannii</i>	40 cm	
<i>Callitris gracilis</i>	40 cm	
<i>Myoporum platycarpum</i>	35 cm	

#### Tree Canopy Cover<sup>+</sup>:

% cover	Character Species	Common Name
15%	<i>Casuarina pauper</i>	Belah
	<i>Allocasuarina luehmannii</i>	Buloke
	<i>Myoporum platycarpum</i>	Sugarwood
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Native Pine

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree <sup>+</sup>		5%	IT
Understorey Tree or Large Shrub <sup>+</sup>	3	10%	T
Medium Shrub	2	40%	MS
Small Shrub	4	15%	SS
Prostrate Shrub	1	1%	PS
Large Herb*	2	5%	LH
Medium Herb*	6	15%	MH
Small or Prostrate Herb*	8	15%	SH
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	2	5%	MTG
Medium to Tiny Non-tufted Graminoid	1	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	30%	S/C

\* Largely seasonal life form

# EVC 98: Semi-arid Chenopod Woodland - Murray Mallee bioregion

LF Code	Species typical of at least part of EVC range	Common Name
T <sup>+</sup>	<i>Alectryon oleifolius</i> ssp. <i>canescens</i>	Cattlebush
T <sup>+</sup>	<i>Acacia melvillei</i>	Myall
T <sup>+</sup>	<i>Hakea leucoptera</i> ssp. <i>leucoptera</i>	Silver Needlewood
MS	<i>Maireana pyramidata</i>	Shrubby Bluebush
MS	<i>Maireana sedifolia</i>	Pearl Bluebush
MS	<i>Atriplex nummularia</i>	Old Man Saltbush
MS	<i>Nitraria billardierei</i>	Nitre-bush
SS	<i>Sclerolaena obliquicuspis</i>	Limestone Copperburr
SS	<i>Sclerolaena tricuspidata</i>	Three-spined Bassia
SS	<i>Sclerolaena divaricata</i>	Tangled Bassia
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
PS	<i>Sclerochlamys brachyptera</i>	Short-wing Saltbush
LH	<i>Polycalymma stuartii</i>	Poached-egg Daisy
MH	<i>Brachyscome lineariloba</i>	Hard-head Daisy
MH	<i>Osteocarpum acropterum</i> var. <i>deminutum</i>	Babbagia
MH	<i>Zygophyllum crenatum</i>	Hard-head Daisy
MH	<i>Zygophyllum ammobophilum</i>	Sand Twin-leaf
SH	<i>Calotis hispidula</i>	Hairy Burr-daisy
SH	<i>Plagiobothrys elachanthus</i>	Hairy Forget-me-not
SH	<i>Isoetopsis graminifolia</i>	Grass Cushion
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower

**Recruitment:**  
Continuous

**Organic Litter:**  
5% in shrubland  
15% in woodland.

**Logs<sup>+</sup>:**  
5m/0.1ha

Weediness:				
LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Salvia verbenaca</i>	Wild Sage	high	high
LH	<i>Sisymbrium erysimoides</i>	Smooth Mustard	high	high
MH	<i>Reichardia tingitana</i>	False Sow-thistle	low	low
MH	<i>Limonium</i> spp.	Sea-lavender	high	high
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	high
MH	<i>Erodium cicutarium</i>	Common Heron's-bill	high	low
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
SH	<i>Medicago minima</i>	Little Medic	high	high
MTG	<i>Schismus barbatus</i>	Arabian Grass	high	high
MTG	<i>Critesion murinum</i> ssp. <i>glaucom</i>	Blue Barley-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia</i> spp.		high	high

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## EVC/Bioregion Benchmark for Vegetation Quality Assessment

### Murray Mallee bioregion

#### EVC 101: Samphire Shrubland

##### Description:

Low open shrub layer to 0.5 m of succulent chenopods on saline clay pans. Found in association with the various halite salinas that have developed within evaporative basins or 'boinkas'.

##### Life forms:

Life form	#Spp	%Cover	LF code
Small Shrub	4	20%	SS
Medium Herb	7	5%	MH
Small or Prostrate Herb	3	5%	SH
Medium to Small Tufted Graminoid	2	1%	MTG
Medium to Tiny Non-tufted Graminoid	2	1%	MNG
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>30%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
SS	<i>Halosarcia pruinosa</i>	Bluish Glasswort
SS	<i>Halosarcia halocnemoides</i> ssp. <i>halocnemoides</i>	Grey Glasswort
SS	<i>Halosarcia pergranulata</i>	Blackseed Glasswort
SS	r <i>Frankenia sessilis</i>	Small-leaf Sea-heath
MH	<i>Senecio glossanthus</i>	Slender Groundsel
MH	<i>Hymenolobus procumbens</i>	Oval Purse
MH	<i>Brachyscome lineariloba</i>	Hard-head Daisy
MH	r <i>Brachyscome exilis</i>	Finger-leaved Daisy
SH	<i>Disphyma crassifolium</i> ssp. <i>clavellatum</i>	Rounded Noon-flower
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower
SH	<i>Crassula sieberiana</i>	Sieber Crassula
SH	<i>Millotia muelleri</i>	Common Bow-flower
MTG	<i>Triglochin calcitrapum</i> s.l.	Spurred Arrowgrass
MNG	<i>Triglochin nanum</i>	Dwarf Arrowgrass

##### Recruitment:

Continuous

##### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
MH	<i>Reichardia tingitana</i>	Reichardia	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Spergularia diandra</i>	Lesser Sand-spurrey	high	low
SH	<i>Medicago minima</i>	Little Medic	high	high
SH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MTG	<i>Critetion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia bromoides</i>	Rat's-tail Fescue	high	high
SNG	<i>Schismus barbata</i>	Arabian Grass	high	low
SNG	<i>Lamarckia aurea</i>	Golden-top	high	low
SNG	<i>Parapholis incurva</i>	Coast Barb-grass	high	high
SNG	<i>Critetion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high



# EVC 101: Samphire Shrubland - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 102: Low Chenopod Shrubland

#### Description:

Chenopod shrubland to 1 m tall occupying broad, flat alluvial terraces occur along the Murray River, west from Mildura to the border. Also found in narrow bands fringing raak and saline lakes such as Lake Tyrell and on relict lakebed surfaces such as Pine Plains. The field layer is characterised by succulents and a suite of annual herbs.

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	1	5%	MS
Small Shrub	4	25%	SS
Prostrate Shrub	2	5%	PS
Large Herb	2	1%	LH
Medium Herb	6	25%	MH
Small or Prostrate Herb	4	20%	SH
Medium to Small Tufted Graminoid	3	5%	MTG
Medium to Tiny Non-tufted Graminoid	2	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	20%	S/C

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Nitraria billardierei</i>	Nitre-bush
SS	<i>Minuria cunninghamii</i>	Bush Minuria
SS	<i>Sclerolaena tricuspidis</i>	Three-spined Bassia
SS	<i>Stelligera endecaspinis</i>	Starfruit Bassia
SS	<i>Atriplex vesicaria</i>	Bladder Saltbush
PS	<i>Sclerochlamys brachyptera</i>	Short-wing Saltbush
PS	<i>Osteocarpum acropterum</i> var. <i>deminutum</i>	Babbagia
LH	<i>Senecio pinnatifolius</i>	Variable Groundsel
MH	<i>Brachyscome lineariloba</i>	Hard-head Daisy
MH	<i>Senecio glossanthus</i>	Slender Groundsel
MH	<i>Crassula colorata</i>	Dense Crassula
MH	<i>Goodenia pusilliflora</i>	Small-flower Goodenia
SH	<i>Disphyma crassifolium</i> ssp. <i>clavellatum</i>	Rounded Noon-flower
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower
SH	<i>Isoetopsis graminifolia</i>	Grass Cushion
MTG	<i>Austrostipa eremophila</i>	Desert Spear-grass
TTG	<i>Hypoxis glabella</i> var. <i>glabella</i>	Tiny Star

#### Recruitment:

Continuous

#### Organic Litter:

5% cover

# EVC 102: Low Chenopod Shrubland - Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
MH	<i>Reichardia tingitana</i>	False Sow-thistle	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Spergularia diandra</i>	Lesser Sand-spurrey	high	low
SH	<i>Medicago minima</i>	Little Medic	high	high
SH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MTG	<i>Critesion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
SNG	<i>Schismus barbata</i>	Arabian Grass	high	high
SNG	<i>Lamarckia aurea</i>	Golden-top	high	low
SNG	<i>Parapholis incurva</i>	Coast Barb-grass	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 103: Riverine Chenopod Woodland (*syn.* Black Box Chenopod Woodland)

#### Description:

Eucalypt woodland to 15 m tall with a diverse shrubby and grassy understorey occurring on most elevated riverine terraces. Confined to heavy clay soils on higher level terraces within or on the margins of riverine floodplains (or former floodplains), naturally subject to only extremely infrequent incidental shallow flooding from major events if at all flooded.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus largiflorens</i>	40 cm	5/ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
10%	<i>Eucalyptus largiflorens</i>	Black Box
	<i>Acacia stenophylla</i>	River Coobah

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	3	30%	MS
Small Shrub	5	25%	SS
Prostrate Shrub	1	1%	PS
Medium Herb	5	5%	MH
Small or Prostrate Herb*	5	10%	SH
Medium to Small Tufted Graminoid	2	5%	MTG

\* Largely seasonal life form

**Total understorey projective foliage cover 55%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Atriplex nummularia</i>	Old-man Saltbush
MS	<i>Chenopodium nitriaceum</i>	Nitre Goosefoot
MS	<i>Eremophila divaricata</i> ssp. <i>divaricata</i>	Spreading Emu-bush
SS	<i>Sclerolaena tricuspid</i>	Streaked Copperburr
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Atriplex lindleyi</i>	Flat-top Saltbush
SS	<i>Rhagodia spinescens</i>	Hedge Saltbush
PS	<i>Sclerochlamys brachyptera</i>	Short-wing Saltbush
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Calocephalus sonderi</i>	Pale Beauty-heads
MH	<i>Senecio glossanthus</i>	Slender Groundsel
MH	<i>Brachyscome lineariloba</i>	Hard-head Daisy
SH	<i>Disphyma crassifolium</i> ssp. <i>clavellatum</i>	Rounded Noon-flower
SH	<i>Maireana pentagona</i>	Hairy Bluebush

# EVC 103: Riverine Chenopod Woodland (*syn.* Black Box Chenopod Woodland) - Murray Mallee Bioregion

## Recruitment:

Continuous

## Organic Litter:

5% cover

## Logs:

5m/0.1 ha.

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i> subsp. <i>europaea</i>	Olive	low	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	low	high
LH	<i>Sisymbrium erysimoides</i>	Smooth Mustard	high	high
LH	<i>Critesion</i> spp.	Barley-grass	high	low
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Opuntia</i> spp.	Prickly Pear	low	high
LH	<i>Sisymbrium irio</i>	London Mustard	high	high
LH	<i>Psilocaulon granulicaule</i>	Noon-flower	high	high
MH	<i>Limonium sinuatum</i>	Notch-leaf Sea-lavender	high	high
MH	<i>Limonium lobatum</i>	Winged Sea-lavender	high	high
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Mesembryanthemum nodiflora</i>	Ice-plant	high	high
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Marrubium vulgare</i>	Horehound	high	high
MH	<i>Carpobrotus aequilaterus</i>	Angled Pigface	low	high
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	low
MH	<i>Medicago</i> spp.	Medic	high	low
MH	<i>Oxalis pes-caprae</i>	Soursob	high	high
MH	<i>Silene gallica</i>	French Catchfly	high	low
MH	<i>Silene nocturna</i>	Mediterranean Catchfly	high	low
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MTG	<i>Asphodelus fistulosus</i>	Onion Weed	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
MNG	<i>Bromus</i> spp.	Brome	high	high
MNG	<i>Schismus barbatus</i>	Arabian Grass	high	low
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 104: Lignum Swamp

#### Description:

Typically treeless shrubland to 4 m tall, with robust (but sometimes patchy) growth of lignum. Widespread wetland vegetation type in low rainfall areas on heavy soils, subject to infrequent inundation resulting from overbank flows from rivers or local runoff.

#### Life forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	1	20%	MS
Large Herb*	4	5%	LH
Medium Herb*	8	25%	MH
Small or Prostrate Herb*	2	10%	SH
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	2	5%	MTG
Medium to Tiny Non-tufted Graminoid*	2	5%	MNG
Scrambler or Climber	1	1%	SC
Soil crust*	na	10%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover** **75%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
MS	<i>Chenopodium nitriaceum</i>	Nitre Goosefoot
SS	<i>Sclerolaena tricuspidis</i>	Three-spined Bassia
SS	<i>Sclerolaena muricata</i>	Five-spined Bassia
LH	<i>Rumex</i> spp.	Dock
MH	<i>Marsilea drummondii</i>	Common Nardoo
MH	<i>Goodenia</i> spp.	Goodenia
MH	<i>Ranunculus</i> spp.	Buttercup
LNG	<i>Eragrostis australasica</i>	Cane Grass
MNG	<i>Eragrostis infecunda</i>	Barren Cane grass
MTG	<i>Juncus</i> spp.	Rush
MNG	<i>Eleocharis</i> spp.	Spike-sedge
SC	<i>Asperula gemella</i>	Twin-leaf Bedstraw

#### Recruitment:

Continuous

#### Organic Litter:

5% cover

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
SH	<i>Phyla canescens</i>	Lippia	high	high

# EVC 104: Lignum Swamp - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 106: Grassy Riverine Forest

#### Description:

Occurs on the floodplain of major rivers, in a slightly elevated position where floods are infrequent, on deposited silts and sands, forming fertile alluvial soils. River Red Gum forest to 25 m tall with a groundlayer dominated by graminoids. Occasional tall shrubs present.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	90 cm	20 / ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
30%	<i>Eucalyptus camaldulensis</i>	River Red-gum

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	10%	T
Large Herb	2	10%	LH
Medium Herb	3	10%	MH
Medium to Small Tufted Graminoid	3	25%	MTG
Medium to Tiny Non-tufted Graminoid	3	10%	MNG
Bryophytes/Lichens	na	10%	BL
<b>Total understorey projective foliage cover</b>		<b>75%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia stenophylla</i>	Eumong
LH	<i>Wahlenbergia fluminalis</i>	River Bluebell
LH	<i>Senecio quadridentatus</i>	Cotton Fireweed
MH	<i>Goodenia fascicularis</i>	Silky Goodenia
MH	<i>Eclipta platyglossa</i>	Yellow Twin-heads
MTG	<i>Setaria jubiflora</i>	Warrego Summer-grass
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge

#### Recruitment:

Continuous

#### Organic Litter:

40 % cover

#### Logs:

30 m/0.1 ha.

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Lactuca serriola</i>	Prickly Lettuce	high	low
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Centaurea melitensis</i>	Malta Thistle	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Reichardia tingitana</i>	False Sow-thistle	high	low
MH	<i>Phyla canescens</i>	Fog-fruit	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	low
MNG	<i>Bromus rubens</i>	Red Brome	high	low

# EVC 106: Grassy Riverine Forest - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 107: Lake Bed Herbland

#### Description:

Herbland or shrubland to 0.5 m tall dominated by species adapted to drying mud within lake beds. Some evade periods of prolonged inundation as seed, others as dormant tuber-like rootstocks. Occupies drying deep-cracking mud of lakes on floodplains. Floods are intermittent but water may be retained for several seasons leading to active growth at the 'drying mud stage'.

#### Life forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	2	5%	MS
Small Shrub	2	5%	SS
Medium Herb*	3	25%	MH
Small or Prostrate Herb*	3	20%	SH
Medium to Small Tufted Graminoid	2	5%	MTG

\* Largely seasonal life form

**Total understorey projective foliage cover** **60%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Malva australiana</i> s.l.	Southern Hollyhock
MS	<i>Solanum simile</i>	Oondoroo
SS	<i>Glycyrrhiza acanthocarpa</i>	Southern Liquorice
SS	<i>Muehlenbeckia horrida</i> ssp. <i>horrida</i>	Spiny Lignum
MH	<i>Chenopodium pumilio</i>	Clammy Goosefoot
MH	<i>Chenopodium glaucum</i>	Glaucous Goosefoot
SH	<i>Glossostigma elatinooides</i>	Small Mud-mat
SH	<i>Glinus lotoides</i>	Hairy Carpet-weed
SH	<i>Mukia micrantha</i>	Mallee Cucumber

#### Recruitment:

Episodic/Flood. Desirable period between disturbances is 10 years.

#### Organic Litter:

5% cover

#### Weediness:

There are no consistent weeds in this EVC.



# EVC 107: Lake Bed Herbland - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 132: Plains Grassland

#### Description:

Treeless vegetation dominated by largely grass and herb life forms. Shrubs and trees may be also occasionally present.

#### Life forms:

Life form	#Spp	%Cover	LF code
Small Shrub	2	5%	SS
Large Herb	3	5%	LH
Medium Herb*	6	20%	MH
Small or Prostrate Herb*	3	10%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	5	35%	MTG
Medium to Tiny Non-tufted Graminoid*	2	5%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	25%	S/C

\* Largely seasonal life form

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
SS	<i>Sclerolaena napiiformis</i>	Turnip Copperburr
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Maireana decalvans</i>	Black Cotton-bush
SS	<i>Pimelea curviflora s.s.</i>	Curved Rice-flower
LH	<i>Ptilotus exaltatus</i>	Mulla Mulla
LH	<i>Eryngium ovinum</i>	Blue Devil
LH	<i>Calocephalus citreus</i>	Lemon Beauty-heads
LH	<i>Arthropodium fimbriatum</i>	Nodding Chocolate-lily
MH	<i>Calotis scabiosifolia</i>	Rough Burr-daisy
MH	<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia
MH	<i>Sida corrugata</i>	Variable Sida
MH	<i>Ptilotus macrocephalus</i>	Feather Heads
SH	<i>Maireana pentagona</i>	Hairy Bluebush
SH	<i>Chamaesyce drummondii</i>	Flat Spurge
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower
SH	<i>Convolvulus erubescens</i> spp. agg.	Pink Bindweed
LTG	<i>Austrostipa blackii</i>	Crested Spear-grass
LTG	<i>Austrostipa gibbosa</i>	Spurred Spear-grass
LTG	<i>Austrostipa aristiglumis</i>	Plump Spear-grass
MTG	<i>Austrostipa scabra</i>	Rough Spear-grass
MTG	<i>Austrostipa nodosa</i>	Knotty Spear-grass
MTG	<i>Whalleya proluta</i>	Rigid Panic
MTG	<i>Austrodanthonia duttoniana</i>	Brown-back Wallaby-grass

# EVC 132: Plains Grassland - Murray Mallee bioregion

## Recruitment:

Episodic/Fire or Grazing. Desirable period between disturbances is 5 years.

## Organic Litter:

10% cover

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Helminthotheca echioides</i>	Ox-tongue	high	low
LH	<i>Lepidium africanum</i>	Common Peppergrass	high	low
LH	<i>Salvia verbenaca</i>	Wild Sage	high	high
LH	<i>Echium plantagineum</i>	Patterson's Curse	high	high
LH	<i>Sisymbrium irio</i>	London Rocket	high	high
LH	<i>Marrubium vulgare</i>	Horehound	high	high
LNG	<i>Avena fatua</i>	Wild Oat	high	high
MH	<i>Limonium sinuatum</i>	Wild Oat	high	high
MH	<i>Arctotheca calendula</i>	Cape Weed	high	high
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Oxalis pes-caprae</i>	Soursob	high	high
MH	<i>Plantago coronopus</i>	Buck's-horn Plantain	high	high
MH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MH	<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	high	high
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	high
MH	<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	high	high
MH	<i>Trifolium striatum</i>	Knotted Clover	high	low
MH	<i>Trifolium subterraneum</i>	Subterranean Clover	high	low
MH	<i>Hedypnois cretica</i>	Cretan Hedypnois	high	high
MNG	<i>Aira cupaniana</i>	Quicksilver Grass	high	low
MNG	<i>Avena barbata</i>	Bearded Oat	high	high
MNG	<i>Brachypodium distachyon</i>	False Brome	high	high
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	high
MNG	<i>Vulpia muralis</i>	Wall Fescue	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	high
MTG	<i>Bromus diandrus</i>	Great Brome	high	high
MTG	<i>Critesion hystrix</i>	Mediterranean Barley-grass	high	high
MTG	<i>Critesion murinum</i>	Barley-grass	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	high
MTG	<i>Pentstemon airoides</i> ssp. <i>airoides</i>	False Hair-grass	high	low
MTG	<i>Poa bulbosa</i>	Bulbous Meadow-grass	high	high
MTG	<i>Romulea minutiflora</i>	Small-flower Onion-grass	high	high
MTG	<i>Romulea rosea</i>	Onion Grass	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
SH	<i>Medicago minima</i>	Little Medic	high	high
SH	<i>Medicago polymorpha</i>	Burr Medic	high	high
SH	<i>Trifolium glomeratum</i>	Cluster Clover	high	low

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 158: Chenopod Mallee

#### Description:

Open to very open mallee woodland to 12 m tall (almost invariably dominated by *Eucalyptus gracilis*) supported by thin Woorinen deposits typically overlying gypsiferous and sodic clays. In undisturbed remnants this EVC is characterised by the dominance of saltbushes and semi-succulent understorey shrubs.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	20 cm	20/ha

#### Tree Canopy Cover:

% cover	Character Species	Common Name
20%	<i>Eucalyptus gracilis</i>	Yorrell
	<i>Eucalyptus oleosa</i> ssp. <i>oleosa</i>	Oil Mallee
	<i>Eucalyptus dumosa</i>	Dumosa Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	1	5%	MS
Small Shrub	9	45%	SS
Medium Herb	3	5%	MH
Small or Prostrate Herb	2	10%	SH
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	15%	S/C
<b>Total understorey projective foliage cover</b>		<b>65%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Maireana pyramidata</i>	Black Bluebush
SS	<i>Atriplex lindleyi</i>	Baldoo
SS	<i>Atriplex vesicaria</i> ssp. <i>variabilis</i>	Bladder Salt-bush
SS	<i>Zygophyllum aurantiacum</i> ssp. <i>aurantiacum</i>	Shrubby Twin-leaf
SS	<i>Nitraria billardierei</i>	Nitre-bush
MH	<i>Eriochiton sclerolaenoides</i>	Woolly-fruit Bluebush
MH	<i>Zygophyllum apiculatum</i>	Pointed Twin-leaf
MH	<i>Zygophyllum crenatum</i>	Notched Twin-leaf
SH	<i>Calandrinia eremaea</i>	Small Purslane
SH	<i>Disphyma crassifolium</i> ssp. <i>clavellatum</i>	Rounded Noon-flower

#### Recruitment:

Continuous (excluding overstorey)

#### Organic Litter:

10% cover

#### Logs:

20m/0.1 ha.

# EVC 158: Chenopod Mallee - Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Opuntia</i> spp.	Prickly Pear	low	high
LH	<i>Psilocaulon granulicaule</i>	Noon-flower	high	high
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Salvia verbenaca</i> var. <i>vernalis</i>	Wild Sage	high	high
LH	<i>Critesion murinum</i> subsp. <i>leporinum</i>	Wall Barley-grass	high	low
LH	<i>Sisymbrium erysimoides</i>	Smooth Mustard	high	high
MH	<i>Carpobrotus aequilaterus</i>	Angled Pigface	low	high
MH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
MH	<i>Mesembryanthemum nodiflora</i>	Ice-plant	high	high
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Marrubium vulgare</i>	Horehound	high	high
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MNG	<i>Schismus barbatus</i>	Arabian Grass	high	high
MNG	<i>Bromus</i> spp.	Brome	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 295: Riverine Grassy Woodland

#### Description:

Occurs on the floodplain of major rivers, in a slightly elevated position where floods are rare, on deposited silts and sands, forming fertile alluvial soils. River Red Gum woodland to 20 m tall with a groundlayer dominated by graminoids and sometimes lightly shrubby or with chenopod shrubs.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	80 cm	15 / ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
20%	<i>Eucalyptus camaldulensis</i>	River Red-gum
	<i>Eucalyptus largiflorens</i>	Black Box

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Small Shrub	4	10%	SS
Large Herb	4	10	LH
Medium Herb	2	10%	MH
Small or Prostrate Herb	5	10%	SH
Large Tufted Graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	5	20%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Bryophytes/Lichens	na	10%	BL
<b>Total understorey projective foliage cover</b>		<b>75%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
SS	<i>Sclerolaena muricata</i> var. <i>villosa</i>	Grey Roly-poly
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Maireana decalvans</i>	Black Cotton-bush
SS	<i>Chenopodium curvispicatum</i>	Cottony Saltbush
LH	<i>Wahlenbergia fuminalis</i>	River Bluebell
LH	<i>Rumex brownii</i>	Slender Dock
LH	<i>Senecio quadridentatus</i>	Cotton Fireweed
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Atriplex semibaccata</i>	Berry Saltbush
MH	<i>Atriplex eardleyae</i>	Small Saltbush
MH	<i>Sida corrugata</i>	Variable Sida
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
MTG	<i>Austrostipa scabra</i>	Rough Spear-grass
MTG	<i>Carex inversa</i>	Knob Sedge
MTG	<i>Juncus subsecundus</i>	Finger Rush

#### Recruitment:

Continuous

#### Organic Litter:

10 % cover

#### Logs:

20 m/0.1 ha.

# EVC 295: Riverine Grassy Woodland – Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MTG	<i>Bromus hordaceus</i> ssp. <i>hordaceus</i>	Soft Brome	high	high
MTG	<i>Critesion murinum</i> ssp. <i>leporinum</i>	Wall Barley-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 641: Riparian Woodland

#### Description:

Occurs beside permanent streams, typically on narrow alluvial deposits. Woodland to 15 m tall generally dominated by *Eucalyptus camaldulensis* over a tussock grass-dominated understorey. Tall shrubs may be present and amphibious herbs may occur in occasional ponds and beside creeks. While flooding may be common, sites are rarely inundated for lengthy periods.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	80 cm	15 / ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
10%	<i>Eucalyptus camaldulensis</i>	River Red-gum

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	2	10%	T
Medium Shrub	2	10%	MS
Small Shrub	1	1%	SS
Large Herb	4	10%	LH
Medium Herb	5	10%	MH
Small or Prostrate Herb	1	5%	SH
Large Tufted Graminoid	3	10%	LTG
Medium to Small Tufted Graminoid	4	30%	MTG
Medium to Tiny Non-tufted Graminoid	2	5%	MNG
Scrambler or Climber	1	5%	SC
Bryophytes/Lichens	na	10%	BL

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Viminaria juncea</i>	Golden Spray
MS	<i>Melaleuca decussata</i>	Totem-poles
SS	<i>Rubus parvifolius</i>	Small-leaf Bramble
LH	<i>Wahlenbergia gracilis</i> s.s.	Sprawling Bluebell
LH	<i>Myriophyllum crispatum</i>	Upright Water-milfoil
MH	<i>Rumex brownii</i>	Slender Dock
MH	<i>Oxalis perennans</i>	Grassland Wood-sorrel
MH	<i>Mentha australis</i>	River Mint
MH	<i>Acaena novae-zelandiae</i>	Bidgee-widgee
LTG	<i>Cyperus gunnii</i> ssp. <i>gunnii</i>	Flecked Flat-sedge
LTG	<i>Carex appressa</i>	Tall Sedge
MTG	<i>Lachnagrostis filiformis</i> var. <i>filiformis</i>	Common Blown-grass
MTG	<i>Juncus amabilis</i>	Hollow Rush
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge
MNG	<i>Cynodon dactylon</i>	Couch
SC	<i>Calystegia sepium</i>	Large Bindweed

#### Recruitment:

Continuous

#### Organic Litter:

30% cover

#### Logs:

20m / 0.1 ha

# EVC 641: Riparian Woodland – Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	<i>Rosa rubiginosa</i>	Sweet Briar	high	high
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Cirsium vulgare</i>	Spear Thistle	high	high
LH	<i>Plantago lanceolata</i>	Ribwort	high	low
LH	<i>Helminthotheca echioides</i>	Ox-tongue	high	low
LH	<i>Rumex crispus</i>	Curled Dock	high	low
LH	<i>Aster subulatus</i>	Aster-weed	high	low
LH	<i>Rorippa palustris</i>	Marsh Yellow-cress	high	high
MH	<i>Leontodon taraxacoides</i> ssp. <i>taraxacoides</i>	Hairy Hawkbit	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
LTG	<i>Phalaris aquatica</i>	Toowoomba Canary-grass	high	high
LNG	<i>Holcus lanatus</i>	Yorkshire Fog	high	high
MTG	<i>Bromus hordeaceus</i> ssp. <i>hordeaceus</i>	Soft Brome	high	low
MTG	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass	high	high
MNG	<i>Paspalum distichum</i>	Water Couch	high	high
SC	<i>Galium aparine</i>	Cleavers	high	low

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 676: Salt Paperbark Woodland

#### Description:

Low non-eucalypt woodland to 8 m tall with herbaceous ground-layer dominated by halophytic chenopods and other succulent herbs with a range of annual grasses and herbs. Occurs on heavy soils with large salt concentrations (sometimes with a shallow sand overlay on lake verges) in areas with seasonally waterlogged heavy clay soils on saline flats and lake verges.

#### Tree Canopy Cover:

%cover	Character Species	Common Name
20%	<i>Melaleuca halmaturorum</i> ssp. <i>halmaturorum</i>	Salt Paperbark

#### Life forms:

Life form	#Spp	%Cover	LF code
Prostrate Shrub	1	10%	PS
Medium Herb	3	15%	MH
Small or Prostrate Herb	3	10%	SH
Medium to Small Tufted Graminoid	1	1%	MTG
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>45%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
PS	<i>Wilsonia rotundifolia</i>	Round-leaf Wilsonia
MH	<i>Sarcocornia quinqueflora</i>	Beaded Glasswort
MH	<i>Samolus repens</i>	Creeping Brookweed
MH	<i>Spergularia</i> sp. 3	Salt Sea-spurrey
SH	<i>Selliera radicans</i>	Shiny Swamp-mat
SH	<i>Angianthus pressianus</i>	Salt Angianthus
SH	<i>Apium prostratum</i>	Annual Celery
MTG	<i>Puccinellia stricta</i> var. <i>perlaxa</i>	Plains Saltmarsh-grass

#### Recruitment:

Continuous

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
MH	<i>Reichardia tingitana</i>	Reichardia	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Spergularia diandra</i>	Lesser Sand-spurrey	high	low
SH	<i>Medicago minima</i>	Little Medic	high	high
SH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MTG	<i>Critesion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia bromoides</i>	Rat's-tail Fescue	high	high
SNG	<i>Schismus barbata</i>	Arabian Grass	high	low
SNG	<i>Lamarckia aurea</i>	Golden-top	high	low
SNG	<i>Parapholis incurva</i>	Coast Barb-grass	high	high
SNG	<i>Critesion murinum</i> subsp. <i>glaucum</i>	Blue Barley-grass	high	high



# EVC 676: Salt Paperbark Woodland - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 803: Plains Woodland

#### Description:

Grassy or sedgy woodland to 15 m tall (typically dominated by *Eucalyptus largiflorens* in the north-western part of its range) with large inter-tussock spaces potentially supporting a range of annual or geophytic herbs adapted to low summer rainfall, with low overall biomass. Mostly occurs on terrain of low relief in areas receiving <600 mm rainfall per annum. Fertile, sometimes seasonally waterlogged, mostly silty, loamy or clay topsoils, with heavy subsoils, derived largely from recent (ie Quaternary) fluvial or alluvial deposits.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	60 cm	15/ha
<i>Allocasuarina luehmannii</i>	40 cm	

#### Tree Canopy Cover:

%cover	Character Species	Common Name
15%	<i>Eucalyptus largiflorens</i>	Black Box
	<i>Allocasuarina luehmannii</i>	Buloke
	<i>Eucalyptus microcarpa</i>	Grey Box
	<i>Eucalyptus porosa</i>	Black Mallee-box

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	3	10%	MS
Small shrub	1	5%	SS
Prostrate shrub	2	10%	PS
Large Herb	3	1%	LH
Medium Herb	9	10%	MH
Small or Prostrate Herb	5	10%	SH
Large tufted graminoid	1	1%	LTG
Medium to Small Tufted Graminoid	4	20%	MTG
Medium to Tiny Non-tufted Graminoid	2	1%	MNG
Scrambler or Climber	1	1%	SC
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>80%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Pittosporum angustifolium</i>	Weeping Pittosporum
MS	<i>Acacia pycnantha</i>	Golden Wattle
MS	<i>Acacia acinacea</i> s.l.	Gold-dust Wattle
SS	<i>Eutaxia microphylla</i> var. <i>microphylla</i>	Common Eutaxia
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
LH	<i>Ajuga australis</i>	Austral Bugle
LH	<i>Senecio quadridentatus</i>	Cotton Fireweed
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Calocephalus citreus</i>	Lemon Beauty-heads
MH	<i>Plantago gaudichaudii</i>	Narrow Plantain
MH	<i>Sida corrugata</i>	Variable Sida
SH	<i>Crassula sieberiana</i>	Sieber Crassula
SH	<i>Actinobole uliginosum</i>	Flannel Cudweed
SH	<i>Oxalis perennans</i>	Grassland Wood-sorrel
SH	<i>Calotis hispidula</i>	Hairy Burr-daisy
LTG	<i>Austrostipa aristiglumis</i>	Plump Spear-grass
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MTG	<i>Dianella revoluta</i> s.l.	Common Wallaby-grass

# EVC 803: Plains Woodland - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

10% cover

**Logs:**

10m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Sonchus oleraceus</i>	Common Sow-thistle	high	low
LH	<i>Opuntia</i> spp	Prickly Pear	low	high
MH	<i>Gazania linearis</i>	Gazania	high	high
MH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	low
MH	<i>Silene longicaulis</i>	Portuguese Catchfly	high	low
SH	<i>Medicago minima</i>	Little Medic	high	low
MTG	<i>Schismus barbatus</i>	Arabian Grass	high	low
MTG	<i>Poa bulbosa</i>	Bulbous Meadow-grass	high	high
MTG	<i>Pentaschistis airoides</i> subsp. <i>airoides</i>	False Hair-grass	high	high
MTG	<i>Romulea rosea</i>	Onion Grass	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
MNG	<i>Bromus</i> spp.	Brome	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 808: Lignum Shrubland

#### Description:

Relatively open shrubland of species of divaricate growth form. The ground-layer is typically herbaceous or a turf grassland, rich in annual/ephemeral herbs and small chenopods. Characterised the open and even distribution of relatively small Lignum shrubs. Occupies heavy soil plains along Murray River, low-lying areas on higher-level (but still potentially flood-prone) terraces.

#### Life forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	2	30%	MS
Small Shrub	3	10%	SS
Large Herb	1	1%	LH
Medium Herb	6	10%	MH
Small or Prostrate Herb*	5	5%	SH
Large Non-tufted Graminoid	1	10%	LNG
Medium to Small Tufted Graminoid	2	20%	MTG
Soil Crust	na	10%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover**

**75%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
MS	<i>Chenopodium nitriaceum</i>	Nitre-bush
SS	<i>Sclerolaena tricuspidis</i>	Three-spined Bassia
SS	<i>Sclerochlamys brachyptera</i>	Short-wing Saltbush
LH	<i>Senecio glossanthus</i>	Slender Groundsel
MH	<i>Plantago cunninghamii</i>	Clay Plantain
MH	<i>Brachyscome lineariloba</i>	Hard-headed Daisy
MH	<i>Brachyscome ciliaris</i>	Variable Daisy
MH	<i>Calocephalus sonderi</i>	Pale Beauty-heads
SH	<i>Isoetopsis graminifolia</i>	Grass Cushion
SH	<i>Rhodanthe corymbiflora</i>	Paper Sun-ray
SH	<i>Atriplex leptocarpa</i>	Slender-fruit Saltbush
SH	<i>Tetragonia eremaea</i> s.l.	Annual Spinach
LNG	<i>Eragrostis australasica</i>	Cane-grass
MTG	<i>Sporobolus mitchellii</i>	Rat-tail Couch
MTG	<i>Setaria jubiflora</i>	Warrego Summer-grass

#### Recruitment:

Continuous

#### Organic Litter:

10% cover

#### Weediness:

There are no consistent weeds in this EVC.

# EVC 808: Lignum Shrubland – Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 809: Floodplain Grassy Wetland

#### Description:

Wetland dominated by floating aquatic grasses (which persist to some extent as turf during drier periods), occurring in the most flood-prone riverine areas. Typically treeless, but sometimes with thickets of saplings or scattered more mature specimens of *Eucalyptus camaldulensis*. Occupies temporary shallow lakes in the most flood-prone riverine areas, also occurs as a narrow intermediate band around some floodway ponds.

#### Life forms:

Life form	#Spp	%Cover	LF code
Medium Herb	5	10%	MH
Small or Prostrate Herb	3	5%	SH
Large Tufted Graminoid	1	5%	LTG
Medium to Small Tufted Graminoid	3	5%	MTG
Medium to Tiny Non-tufted Graminoid	4	60%	MNG
<b>Total understorey projective foliage cover</b>		<b>85%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MH	<i>Myriophyllum crispatum</i>	Upright Milfoil
MH	<i>Ludwigia peploides</i> ssp. <i>montevidensis</i>	Clove-strip
MH	<i>Nymphoides crenata</i>	Wavy Marshwort
MH	<i>Centipeda cunninghamii</i>	Common Sneezeweed
SH	<i>Azolla filiculoides</i>	Pacific Azolla
SH	<i>Persicaria prostrata</i>	Creeping Knotweed
LTG	<i>Juncus ingens</i>	Giant Rush
MTG	<i>Lachnagrostis filiformis</i>	Common Blown Grass
MTG	<i>Sporobolus mitchellii</i>	Brown-back Wallaby-grass
MNG	<i>Pseudoraphis spinescens</i>	Spiny Mud-grass
MNG	<i>Amphibromus fluitans</i>	River Swamp Wallaby-grass
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge
MNG	<i>Cynodon dactylon</i> var. <i>pulchellus</i>	Native Couch

#### Recruitment:

Episodic/Flood. Desirable period between disturbances is 5 years.

#### Organic Litter:

10% cover

#### Logs:

5 m/0.1 ha. (where trees are overhanging the wetland)

#### Weediness:

There are no consistent weeds in this EVC.

# EVC 809: Floodplain Grassy Wetland - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 810: Floodway Pond Herbland

#### Description:

Low herbland to < 0.3 m tall with occasional emergent life forms, usually with a high content of ephemeral species. Floors of ponds associated with floodway systems. Typically heavy deeply cracking clay soils. Characteristically smaller wetlands with a more regular flooding and drying cycle in comparison to sites supporting Lake Bed Herbland.

#### Life forms:

Life form	#Spp	%Cover	LF code
Large Herb	1	1%	LH
Medium Herb	5	20%	MH
Small or Prostrate Herb*	4	15%	SH
Medium to Small Tufted Graminoid	2	10%	MTG
Medium to Tiny Non-tufted Graminoid	3	20%	MNG
Soil Crust	na	10%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover** 75%

LF Code	Species typical of at least part of EVC range	Common Name
MH	<i>Persicaria prostrata</i>	Creeping Knotweed
MH	<i>Centipeda cunninghamii</i>	Common Sneezeweed
MH	<i>Alternanthera denticulata</i> s.l.	Lesser Joyweed
SH	<i>Polygonum plebeium</i>	Small Knotweed
SH	<i>Dysphania glomulifera</i> ssp. <i>glomulifera</i>	Globular Pigweed
SH	<i>Lemna disperma</i>	Common Duckweed
MTG	<i>Lachnagrostis filiformis</i>	Rat-tail Couch
MNG	<i>Pseudoraphis spinescens</i>	Spiny Mud Grass
MNG	<i>Carex gaudichaudiana</i>	Fen Sedge
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge

#### Recruitment:

Episodic/Flood. Desirable period between disturbances is 5 years.

#### Organic Litter:

5% cover

#### Logs:

5 m/0.1 ha.(where trees are overhanging the wetland)

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	<i>Callitriche stagnalis</i>	Water Starwort	high	high

# EVC 810: Floodway Pond Herbland - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 813: Intermittent Swampy Woodland

#### Description:

Eucalypt woodland to 15 m tall with a variously shrubby and rhizomatous sedgy - turf grass understorey, at best development dominated by flood stimulated species in association with flora tolerant of inundation. Flooding is unreliable but extensive when it happens. Occupies low elevation areas on river terraces (mostly at the rear of point-bar deposits or adjacent to major floodways) and lacustrine verges (where sometimes localised to narrow transitional bands). Soils often have a shallow sand layer over heavy and frequently slightly brackish soils.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus camaldulensis</i>	70 cm	15 / ha
<i>Eucalyptus largiflorens</i>	50 cm	

#### Tree Canopy Cover:

%cover	Character Species	Common Name
20%	<i>Eucalyptus camaldulensis</i>	River Red-gum
	<i>Eucalyptus largiflorens</i>	Black Box

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	1	5%	MS
Small Shrub	1	5%	SS
Large Herb	2	5%	LH
Medium Herb	5	10%	MH
Small or Prostrate Herb	1	5%	SH
Medium to Small Tufted Graminoid	3	30%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
<b>Total understorey projective foliage cover</b>		<b>70%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia stenophylla</i>	River Coobah
MS	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
SS	<i>Cressa cretica</i>	Rosinweed
LH	<i>Stemodia florulenta</i>	Blue Rod
LH	<i>Wahlenbergia fluminalis</i>	River Bluebell
MH	<i>Haloragis aspera</i>	Rough Raspwort
MH	<i>Centipeda cunninghamii</i>	Common Sneezeweed
MH	<i>Calocephalus sonderi</i>	Pale Beauty-heads
SH	<i>Epiltes australis</i>	Spreading Nut-heads
MTG	<i>Sporobolus mitchellii</i>	Rat-tail Couch
MTG	<i>Cyperus gymnocaulos</i>	Spring Flat-sedge
MTG	<i>Lachnagrostis filiformis</i>	Common Blown-grass
MNG	<i>Cynodon dactylon</i> var. <i>pulchellus</i>	Native Couch

#### Recruitment:

Continuous

#### Organic Litter:

20 % cover

#### Logs:

20 m/0.1 ha.

#### Weediness:

There are no consistent weeds in this EVC.



# EVC 813: Intermittent Swampy Woodland – Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 816: Sedgy Riverine Forest

#### Description:

Eucalypt forest to 25 m tall with understorey dominated by larger sedges. Understorey composition indicative of at least occasional shallow flooding and a tolerance of gaps between floods of several years. Typically on heavy soils which can become wet in winter. It is considered to occupy areas infrequently flooded and in which flood duration may be short, typically areas that are the last to flood and the first from which floods quickly recede. Soils are typically heavy clays. The major understorey species *Carex tereticaulis* is intolerant of total immersion (at least in turbid water).

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	80 cm	20 / ha

#### Tree Canopy Cover:

%cover	Character Species	Common Name
30%	<i>Eucalyptus camaldulensis</i>	River Red-gum

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	1	10%	T
Medium Herb	2	5%	MH
Small or Prostrate Herb	2	5%	SH
Large Tufted Graminoid	1	50%	LTG
Medium to Small Tufted Graminoid	2	10%	MTG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
<b>Total understorey projective foliage cover</b>		<b>90%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Exocarpos strictus</i>	Pale-fruit Ballart
LH	<i>Wahlenbergia fluminalis</i>	River Bluebell
LH	<i>Senecio quadridentatus</i>	Cotton Fireweed
LH	<i>Brachyscome basaltica</i> var. <i>gracilis</i>	Woodland Swamp-daisy
MH	<i>Marsilea drummondii</i>	Common Nardoo
SH	<i>Lobelia concolor</i>	Poison Pratia
SH	<i>Chamaesyce drummondii</i>	Flat Spurge
LTG	<i>Carex tereticaulis</i>	Rush Sedge
MTG	<i>Setaria jubiflora</i>	Warrego Summer-grass
MTG	<i>Lachnagrostis filiformis</i>	Common Blown Grass
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge
MNG	<i>Eleocharis pusilla</i>	Small Spike-sedge

#### Recruitment:

Episodic/Flood. Desirable period between disturbances is 10 years.

#### Organic Litter:

10 % cover

#### Logs:

20 m/0.1 ha.

# EVC 816: Sedgy Riverine Forest - Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Lactuca serriola</i>	Prickly Lettuce	high	low
LH	<i>Aster subulatus</i>	Aster Weed	high	low
LH	<i>Helminthotheca echioides</i>	Prickly Ox-tongue	high	low
LH	<i>Cirsium vulgare</i>	Spear Thistle	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 818: Shrubby Riverine Woodland

#### Description:

Eucalypt woodland to open forest to 15 m tall of less flood-prone (riverine) watercourse fringes, principally on levees and higher sections of point-bar deposits. The understorey includes a range of species shared with drier floodplain habitats with a sparse shrub component, ground-layer patchily dominated by various life-forms. A range of large dicot herbs (mostly herbaceous perennial, several with a growth-form approaching that of small shrub) are often conspicuous.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus largiflorens</i>	50 cm	5/ha
<i>Eucalyptus camaldulensis</i>	80 cm	

#### Tree Canopy Cover:

%cover	Character Species	Common Name
10%	<i>Eucalyptus largiflorens</i>	Black Box
	<i>Eucalyptus camaldulensis</i>	River Red-gum

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	2	10%	MS
Small Shrub	2	5%	SS
Large Herb	4	10%	LH
Medium Herb	5	10%	MH
Small or Prostrate Herb*	2	1%	SH
Medium to Small Tufted Graminoid	2	10%	MTG

\* Largely seasonal life form

**Total understorey projective foliage cover** **50%**

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia stenophylla</i>	River Coobah
MS	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
MS	<i>Chenopodium nitariaceum</i>	Nitre Goosefoot
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
PS	<i>Scleroclamys brachyptera</i>	Short-wing Saltbush
LH	k <i>Senecio cunninghamii</i> var. <i>cunninghamii</i>	Branching Groundsel
LH	<i>Senecio pinnatifolius</i>	Mallee Groundsel
LH	<i>Xerochrysum bracteatum</i>	Golden Everlasting
MH	<i>Calotis cuneifolia</i>	Blue Burr-daisy
MH	k <i>Lotus australis</i>	Austral Trefoil
MH	r <i>Picris squarrosa</i>	Squat Picris
MH	<i>Teucrium racemosum</i> s.l.	Grey Germander
MTG	<i>Setaria jubiflora</i>	Warrego Summer-grass

#### Recruitment:

Continuous

#### Organic Litter:

10% cover

#### Logs:

10m/0.1 ha.

# EVC 818: Shrubby Riverine Woodland - Murray Mallee bioregion

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i> subsp. <i>europaea</i>	Olive	high	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Sisymbrium erysimoides</i>	Smooth Mustard	high	high
LH	<i>Critiesion</i> spp.	Barley-grass	high	low
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Opuntia</i> spp.	Prickly Pear	low	high
LH	<i>Sisymbrium irio</i>	London Mustard	high	high
LH	<i>Psilocaulon granulicaule</i>	Noon-flower	high	high
MH	<i>Limonium sinuatum</i>	Notch-leaf Sea-lavender	high	high
MH	<i>Limonium lobatum</i>	Winged Sea-lavender	high	high
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Mesembryanthemum nodiflora</i>	Ice-plant	high	high
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Marrubium vulgare</i>	Horehound	high	high
MH	<i>Carpobrotus aequilaterus</i>	Angled Pigface	low	high
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	low
MH	<i>Medicago</i> spp.	Medic	high	low
MH	<i>Oxalis pes-caprae</i>	Soursob	high	high
MH	<i>Silene gallica</i>	French Catchfly	high	low
MH	<i>Silene nocturna</i>	Mediterranean Catchfly	high	low
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MTG	<i>Asphodelus fistulosus</i>	Onion Weed	high	high
MNG	<i>Bromus rubens</i>	Red Brome	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
MNG	<i>Bromus</i> spp.	Brome	high	high
MNG	<i>Schismus barbatus</i>	Arabian Grass	high	low
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 821: Tall Marsh

#### Description:

Wetland dominated by tall emergent graminoids (rushes, sedges, reeds), typically in thick species-poor swards. Competitive exclusion in core wetland habitat - of optimum growing conditions for species tolerant of sustained shallow inundation. Occupies wetlands usually associated with anabranch creeks. Soils are almost permanently moist. Dominant species are tolerant of relatively deep and sustained inundation, but not total immersion for any sustained period.

#### Life Forms:

Life form	#Spp	%Cover	LF code
Medium Herb	6	20%	MH
Small or Prostrate Herb	3	10%	SH
Large Tufted Graminoid	1	10%	LTG
Large Non-tufted Graminoid	3	40%	LNG
Medium to Tiny Non-tufted Graminoid	2	10%	MNG
<b>Total understorey projective foliage cover</b>		<b>90%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MH	<i>Myriophyllum papillosum</i>	Robust Water-milfoil
MH	<i>Persicaria decipiens</i>	Slender Knotweed
MH	<i>Lythrum hyssopifolia</i>	Small Loose-strife
MH	<i>Potamogeton tricaratus</i> s.l.	Floating Pondweed
SH	<i>Lemna disperma</i>	Common Duckweed
SH	<i>Azolla filiculoides</i>	Pacific Azolla
LTG	<i>Juncus ingens</i>	Giant Rush
LNG	<i>Schoenoplectus tabernaemontani</i>	River Club-sedge
LNG	<i>Phragmites australis</i>	Common Reed
LNG	<i>Typha orientalis</i>	Broad-leaf Cumbungi
LNG	<i>Typha domingensis</i>	Cumbungi
MTG	<i>Triglochin procerum</i> s.l.	Water Ribbons
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge
MNG	<i>Pseudoraphis spinescens</i>	Spiny Mud-grass

#### Recruitment:

Episodic/Flood: desirable period of disturbance is every year

#### Organic Litter:

10% cover

#### Logs:

5 m/0.1 ha.(where trees are overhanging the wetland)

#### Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Salix cinerea</i>	Grey Sallow	high	high
MH	<i>Rorippa palustris</i>	Yellow Marsh-cress	high	high
MTG	<i>Polyopogon monspeliensis</i>	Annual Beard-grass	high	low
MNG	<i>Paspalum distichum</i>	Water Couch	high	high

# EVC 821: Tall Marsh - Murray Mallee bioregion

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 823: Lignum Swampy Woodland

#### Description:

Understorey dominated by Lignum, typically of robust character and relatively dense (at least in patches), in association with a Eucalypt and/or Acacia woodland to 15 m tall. The ground layer includes a component of obligate wetland flora that is able to persist even if dormant over dry periods.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus largiflorens</i>	50 cm	15/ha
<i>Eucalyptus camaldulensis</i>	70 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
30%	<i>Eucalyptus largiflorens</i>	Black Box
	<i>Eucalyptus camaldulensis</i>	River Red Gum
	<i>Acacia stenophylla</i>	River Coobah

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	2	30%	MS
Small Shrub	1	5%	SS
Large Herb	2	1%	MH
Medium Herb*	8	10%	MH
Small or Prostrate Herb*	5	10%	SH
Medium to Small Tufted Graminoid*	3	10%	MTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Tiny Non-tufted Graminoid*	3	15%	MNG
Soil Crust	na	10%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover**

**80%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Muelenbeckia florulenta</i>	Tangled Lignum
MS	<i>Chenopodium nitriaceum</i>	Nitre Goosefoot
MS	<i>Muehlenbeckia florulenta</i>	Tangled Lignum
SS	<i>Atriplex lindleyi</i>	Flat-top Saltbush
SS	<i>Sclerolaena muricata</i>	Five-spined Bassia
LH	<i>Rumex</i> spp.	Dock
MH	<i>Marsilea drummondii</i>	Common Nardoo
MH	<i>Brachyscome ciliaris</i>	Variable Daisy
MH	<i>Euchiton sphaericus</i>	Annual Cudweed
MH	<i>Ranunculus</i> spp.	Buttercup
SH	<i>Asperula gemella</i>	Twin-leaf Bedstraw
LNG	<i>Eragrostis australasica</i>	Cane Grass
MTG	<i>Setaria jubiflora</i>	Warrego Summer-grass
MTG	<i>Austrodanthonia duttoniana</i>	Brown-back Wallaby-grass
MTG	<i>Sporobolus mitchellii</i>	Short Rat-tail Grass
MTG	<i>Eragrostis setifolia</i>	Bristly Love-grass
MNG	<i>Eragrostis infecunda</i>	Barren Cane grass
MNG	<i>Eleocharis acuta</i>	Common Spike-sedge
MNG	<i>Eleocharis pusilla</i>	Small Spike-sedge

# EVC 823: Lignum Swampy Woodland - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

5% cover

**Logs:**

10m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
SH	<i>Phyla canescens</i>	Lippia	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 824: Woorinen Mallee

#### Description:

Widespread mallee woodland to 12 m tall, associated with the east-west orientated calcareous dunefields of the Woorinen Formation with a low, open chenopod dominated shrub understorey. A diverse array of sub-shrubs, herbs and grasses are also present. Typically occurs on fine textured red-brown sandy loam and clay loam soils.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	15 cm	30/ha

#### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus oleosa</i> ssp. <i>oleosa</i>	Oil Mallee
	<i>Eucalyptus dumosa</i>	Dumosa Mallee
	<i>Eucalyptus gracilis</i>	Yorrell
	<i>Eucalyptus calycogona</i>	Red Mallee
	<i>Eucalyptus socialis</i>	Grey Mallee
	<i>Eucalyptus cyanophylla</i>	Blue-leaved Mallee

#### Understorey:

Life form	#Spp	%Cover	LF code
Medium Shrub	6	10%	MS
Small Shrub	6	20%	SS
Medium Herb*	6	10%	MH
Small or Prostrate Herb	7	10%	SH
Medium to Small Tufted Graminoid	1	1%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	15%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover 60%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Santalum acuminatum</i>	Sweet Quandong
MS	<i>Exocarpos aphyllus</i>	Leafless Ballart
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
MS	<i>Eremophila glabra</i>	Common Emu-bush
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Chenopodium curvispicatum</i>	Cottony Goosefoot
SS	<i>Olearia muelleri</i>	Mueller Daisy-bush
SS	<i>Maireana pentatropis</i>	Erect Bluebush
MH	<i>Zygophyllum apiculatum</i>	Pointed Twin-leaf
MH	<i>Stenopetalum lineare</i>	Narrow Thread-petal
MH	<i>Eriochiton sclerolaenoides</i>	Wooly-fruit Bluebush
MH	<i>Brachyscome ciliaris</i>	Variable Daisy
SH	<i>Calandrinia eremaea</i>	Small Purslane
SH	<i>Ptilotus seminudus</i>	Rabbit Tails
SH	<i>Rhodanthe pygmaea</i>	Pygmy Sunray
SH	<i>Isoetopsis graminifolia</i>	Grass Cushion
MTG	<i>Austrostipa elegantissima</i>	Feather Spear-grass



# EVC 824: Woorinen Mallee - Murray Mallee bioregion

## Recruitment:

Continuous (excluding overstorey)

## Organic Litter:

20% cover

## Logs:

20m/0.1 ha. (note: large log class does not apply)

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i> subsp. <i>europaea</i>	Olive	high	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Opuntia</i> spp.	Prickly Pear	high	high
LH	<i>Critiesion</i> spp.	Barley-grass	high	low
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Psilocaulon granulicaule</i>	Noon-flower	high	high
LH	<i>Sisymbrium erysimoides</i>	Smooth Mustard	high	high
LH	<i>Sisymbrium irio</i>	London Mustard	high	high
MH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
MH	<i>Carpobrotus aequilaterus</i>	Angled Pigface	high	high
MH	<i>Medicago</i> spp.	Medic	high	low
MH	<i>Marrubium vulgare</i>	Horehound	high	high
MH	<i>Oxalis pes-caprae</i>	Soursob	high	high
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Mesembryanthemum nodiflora</i>	Ice-plant	high	high
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	low
MH	<i>Silene gallica</i>	French Catchfly	high	low
MH	<i>Silene nocturna</i>	Mediterranean Catchfly	high	low
MH	<i>Limonium sinuatum</i>	Notch-leaf Sea-lavender	high	high
MH	<i>Limonium lobatum</i>	Winged Sea-lavender	high	high
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
MNG	<i>Schismus barbatus</i>	Arabian Grass	high	low
MTG	<i>Asphodelus fistulosus</i>	Onion Weed	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	low
MNG	<i>Bromus</i> spp.	Brome	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	low
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 826: Plains Savannah

#### Description:

A structurally diverse vegetation unit which includes 'grassy openings' of a few to many hundreds of hectares, with a variable tree density ranging from a very sparse savanna to woodland. The relative absence of eucalypts is particularly characteristic, with *Allocasuarina luehmannii* and perhaps *Callitris gracilis* ssp. *murrayensis* to 10 m tall being the dominant trees. Widespread on the northern plains.

+ woodland only components (ignore when assessing grassland areas and standardise final score as appropriate)

#### Large trees<sup>+</sup>:

Species	DBH(cm)	#/ha
<i>Allocasuarina luehmannii</i>	40 cm	5/ha
<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	40 cm	

#### Tree Canopy Cover<sup>+</sup>:

% cover	Character Species	Common Name
10%	<i>Allocasuarina luehmannii</i>	Buloke
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree <sup>+</sup>		5%	IT
Understorey Tree or Large Shrub <sup>+</sup>		5%	T
Small Shrub	2	5%	SS
Large Herb	3	5%	LH
Medium Herb*	6	20%	MH
Small or Prostrate Herb*	3	10%	SH
Large Tufted Graminoid	1	5%	LTG
Large Non-tufted Graminoid	1	5%	LNG
Medium to Small Tufted Graminoid	5	35%	MTG
Medium to Tiny Non-tufted Graminoid*	2	5%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	25%	S/C

\* Largely seasonal life form

LF Code	Species typical of at least part of EVC range	Common Name
T	<i>Acacia pendula</i>	Boree
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
SS	<i>Sclerolaena napiformis</i>	Turnip Copperburr
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Maireana decalvans</i>	Black Cotton-bush
SS	<i>Pimelea curviflora</i> s.s.	Curved Rice-flower
LH	<i>Ptilotus exaltatus</i>	Mulla Mulla
LH	<i>Eryngium ovium</i>	Blue Devil
LH	<i>Calocephalus citreus</i>	Lemon Beauty-heads
LH	<i>Arthropodium fimbriatum</i>	Nodding Chocolate-lily
MH	<i>Calotis scabiosifolia</i>	Rough Burr-daisy
MH	<i>Goodenia pinnatifida</i>	Cut-leaf Goodenia
MH	<i>Sida corrugata</i>	Variable Sida
MH	<i>Ptilotus macrocephalus</i>	Feather Heads
SH	<i>Maireana pentagona</i>	Hairy Bluebush
SH	<i>Chamaesyce drummondii</i>	Flat Spurge
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower
SH	<i>Convolvulus erubescens</i> spp. agg.	Pink Bindweed
LTG	<i>Austrostipa blackii</i>	Crested Spear-grass
LTG	<i>Austrostipa gibbosa</i>	Spurred Spear-grass
LTG	<i>Austrostipa aristiglumis</i>	Plump Spear-grass
MTG	<i>Austrostipa scabra</i>	Rough Spear-grass
MTG	<i>Austrostipa nodosa</i>	Knotty Spear-grass
MTG	<i>Whalleya prolata</i>	Rigid Panic
MTG	<i>Austrodanthonia duttoniana</i>	Brown-back Wallaby-grass

# EVC 826: Plains Savannah - Murray Mallee bioregion

## Recruitment:

Continuous

## Organic Litter:

5% cover

## Logs<sup>+</sup>:

5 m/0.1 ha.

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Helminthotheca echioides</i>	Ox-tongue	high	low
LH	<i>Lepidium africanum</i>	Common Peppergrass	high	low
LH	<i>Salvia verbenaca</i>	Wild Sage	high	high
LH	<i>Echium plantagineum</i>	Patterson's curse	high	high
LH	<i>Sisymbrium irio</i>	London Rocket	high	high
LH	<i>Marrubium vulgare</i>	Horehound	high	high
LNG	<i>Avena fatua</i>	Wild Oat	high	high
MH	<i>Limonium sinuatum</i>	Notch-leaf Sea-lavender	high	high
MH	<i>Arctotheca calendula</i>	Cape Weed	high	high
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Oxalis pes-caprae</i>	Sour sob	high	high
MH	<i>Plantago coronopus</i>	Buck's-horn Plantain	high	high
MH	<i>Spergularia rubra</i> s.l.	Red Sand-spurrey	high	low
MH	<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	high	high
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	high
MH	<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	high	high
MH	<i>Trifolium striatum</i>	Knotted Clover	high	low
MH	<i>Trifolium subterraneum</i>	Subterranean Clover	high	low
MH	<i>Hedypnois cretica</i>	Cretan Hedypnois	high	high
MNG	<i>Aira cupaniana</i>	Quicksilver Grass	high	low
MNG	<i>Avena barbata</i>	Bearded Oat	high	high
MNG	<i>Brachypodium distachyon</i>	False Brome	high	high
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	high
MNG	<i>Vulpia muralis</i>	Wall Fescue	high	high
MNG	<i>Vulpia myuros</i>	Rat's-tail Fescue	high	high
MTG	<i>Bromus diandrus</i>	Great Brome	high	high
MTG	<i>Critiesion hystrix</i>	Mediterranean Barley-grass	high	high
MTG	<i>Critiesion murinum</i>	Barley-grass	high	high
MTG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	high
MTG	<i>Pentstemonis airoides</i> ssp. <i>airoides</i>	False Hair-grass	high	low
MTG	<i>Poa bulbosa</i>	Bulbous Meadow-grass	high	high
MTG	<i>Romulea minutiflora</i>	Small-flower Onion-grass	high	high
MTG	<i>Romulea rosea</i>	Onion Grass	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
SH	<i>Medicago minima</i>	Little Medic	high	high
SH	<i>Medicago polymorpha</i>	Burr Medic	high	high
SH	<i>Trifolium glomeratum</i>	Cluster Clover	high	low

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 828: Semi-arid Parilla Woodland

#### Description:

A shrubby, non-eucalypt woodland or open forest to 15 m tall of low rainfall areas associated with topographic highs created by weathered Parilla sandstone ridges and dominated by Belah *Casuarina pauper*. This EVC represents a distinctive floristic segregate of Semi-arid Woodland – comprising relatively undisturbed remnants of this broader vegetation descriptor with little or no groundwater influence.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Casuarina</i> spp.	40 cm	20/ha
<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	40 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
20%	<i>Casuarina pauper</i>	Belah
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	4	10%	MS
Small Shrub	4	10%	SS
Large Herb	2	5%	LH
Medium Herb*	10	10%	MH
Large Non-tufted Graminoid	1	1%	LNG
Medium to Small Tufted Graminoid	2	15%	MTG
Medium to Tiny Non-tufted Graminoid	1	5%	MNG
Epiphyte	1	1%	EP
Bryophytes/Lichens	na	5%	BL
Soil Crust	na	30%	S/C

\* Largely seasonal life form

**Total understorey projective foliage cover 85%**

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Acacia oswaldii</i>	Umbrella Wattle
MS	<i>Exocarpos aphyllus</i>	Leafless Ballart
MS	<i>Alectryon oleifolius</i> ssp. <i>canescens</i>	Cattle Bush
MS	<i>Dodonaea viscosa</i> ssp. <i>angustissima</i>	Slender Hop-bush
SS	<i>Olearia pimeleoides</i>	Pimelea Daisy-bush
SS	<i>Olearia muelleri</i>	Mueller Daisy-bush
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Chenopodium curvispicatum</i>	Cottony Saltbush
MH	<i>Einadia nutans</i> ssp. <i>nutans</i>	Nodding Saltbush
MH	<i>Podolepis capillaris</i>	Wiry Podolepis
MH	<i>Chenopodium desertorum</i> ssp. <i>desertorum</i>	Frosted Goosefoot
LNG	<i>Austrostipa platychaeta</i>	Flat-awned Spear-grass
MTG	<i>Austrostipa</i> spp.	Spear Grasses
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass

# EVC 828: Semi-arid Parilla Woodland - Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

10% cover

**Logs:**

12m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
MH	<i>Reichardia tingitana</i>	False Sow-thistle	high	low
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 829: Chenopod Grassland

#### Description:

Open to sparse shrubland with a more or less continuous tussock grass sward found on heavy somewhat sodic clay plains fringing the active floodplains of major watercourses such as the Loddon and Avoca Rivers.

#### Life Forms:

Life form	#Spp	%Cover	LF code
Medium Shrub	1	10%	MS
Small Shrub	6	30%	SS
Large Herb	1	1%	LH
Medium Herbs*	5	15%	MH
Small or Prostrate Herbs*	4	5%	SH
Medium to Small Tufted Graminoid	3	20%	MTG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	20%	S/C

\* Largely seasonal life form

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Lycium australe</i>	Australian Box-thorn
MS	<i>Nitraria billardierei</i>	Nitre-bush
SS	<i>Sclerolaena diacantha</i>	Grey Copperburr
SS	<i>Maireana aphylla</i>	Leafless Bluebush
SS	<i>Minuria cunninghamii</i>	Bush Minuria
SS	<i>Lawrencia squamata</i>	Thorny Lawrencia
PS	<i>Sclerochlamys brachyptera</i>	Short-wing Saltbush
PS	<i>Atriplex semibaccata</i>	Berry Saltbush
LH	<i>Podolepis canescens</i>	Grey Podolepis
MH	<i>Rhodanthe stuartiana</i>	Clay Sunray
MH	<i>Teucrium racemosum</i> s.s.	Grey Germander
MH	<i>Maireana excavata</i>	Bottle Bluebush
MH	<i>Sida corrugata</i>	Variable Sida
SH	<i>Hyalosperma glutinosum</i> ssp. <i>glutinosum</i>	Golden Sunray
SH	<i>Hyalosperma semisterile</i>	Orange Sunray
SH	<i>Rhodanthe pygmaea</i>	Pygmy Sunray
SH	<i>Pogonolepis muelleriana</i>	Stiff Cup-flower
LTG	<i>Austrostipa aristiglumis</i>	Plump Spear-grass
MTG	<i>Austrostipa</i> spp.	Spear-grass
MTG	<i>Whalleya proluta</i>	Rigid Panic
MTG	<i>Enteropogon acicularis</i>	Spider Grass
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass

# EVC 829: Chenopod Grassland - Murray Mallee bioregion

## Recruitment:

Continuous

## Organic Litter:

5% cover

## Weediness:

LF Code	Typical Weed Species	Common Name	Invasive	Impact
LH	<i>Carthamus lanatus</i>	Saffron Thistle	high	high
MH	<i>Limonium lobatum</i>	Winged Sea-lavender	high	high
MH	<i>Hedypnois cretica</i>	Cretan Hedypnois	high	high
MH	<i>Arctotheca calendula</i>	Cape Weed	high	high
MH	<i>Romulea rosea</i>	Onion Grass	high	high
SH	<i>Moraea setifolia</i>	Thread Iris	high	high
SH	<i>Medicago</i> spp.	Medic	high	high
MTG	<i>Critesion murinum</i> subsp. <i>leporinum</i>	Wall Barley-grass	high	high
MNG	<i>Bromus madritensis</i>	Madrid Brome	high	high
MNG	<i>Lolium rigidum</i>	Wimmera Rye-grass	high	high

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## EVC/Bioregion Benchmark for Vegetation Quality Assessment

### Murray Mallee bioregion

#### EVC 882: Shallow Sands Woodland

##### Description:

Woodland or open-forest to 15 m tall, with a sparse shrub layer of heathy, ericoid shrubs and a species-rich ground cover dominated by grasses and annual herbs. Typically it occurs between the heavier soils of the plains and the deep-sand aeolian dunefields which overlay these plains, but also occurs on broader areas of plains covered by shallow fluvial, outwash or aeolian sands overlaying drainage-impeding clays. Occurs in areas with <500 mm annual rainfall.

##### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	60 cm	15/ha
<i>Allocasuarina luehmannii</i>	40 cm	
<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	40 cm	

##### Tree Canopy Cover:

% cover	Character Species	Common Name
20%	<i>Eucalyptus leucoxylon</i>	Yellow Gum
	<i>Allocasuarina luehmannii</i>	Buloke
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine

##### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Understorey Tree or Large Shrub	1	5%	T
Medium Shrub	3	10%	MS
Small Shrub	4	20%	SS
Prostrate Shrub	2	5%	PS
Large Herb	1	1%	LH
Medium Herb	7	15%	MH
Small or Prostrate Herb	3	5%	SH
Medium to Small Tufted Graminoid	8	25%	MTG
Tiny Tufted Graminoid*	2	1%	TTG
Medium to Tiny Non-tufted Graminoid	3	1%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C

\* Largely seasonal life form

##### LF Code

##### Species typical of at least part of EVC range

##### Common Name

T	<i>Allocasuarina verticillata</i>	Drooping Sheoke
MS	<i>Calytrix tetragona</i>	Common Fringe-myrtle
MS	<i>Acacia pycnantha</i>	Golden Wattle
SS	<i>Hibbertia stricta</i> s.l.	Upright Guinea-flower
SS	<i>Eutaxia microphylla</i>	Common Eutaxia
SS	<i>Pultenaea hispidula</i>	Rusty Bush-pea
PS	<i>Astroloma humifusum</i>	Cranberry Heath
MH	<i>Microseris scapigera</i> spp. agg.	Yam Daisy
MH	<i>Acaena echinata</i>	Sheep's Burr
MH	<i>Wurmbea dioica</i>	Common Early Nancy
SH	<i>Daucus glochidiatus</i>	Australian Carrot
SH	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
SH	<i>Drosera whittakeri</i> ssp. <i>aberrans</i>	Scented Sundew
LTG	<i>Austrostipa mollis</i>	Supple Spear-grass
MTG	<i>Schoenus apogon</i>	Common Bog-sedge
MTG	<i>Neurachne alopecuroides</i>	Fox-tail Mulga-grass
MTG	<i>Lomandra nana</i>	Dwarf Mat-rush
MTG	<i>Arthropodium strictum</i> s.l.	Chocolate Lily
TTG	<i>Centrolepis strigosa</i> ssp. <i>strigosa</i>	Hairy Centrolepis
TTG	<i>Centrolepis aristata</i>	Pointed Centrolepis
TTG	<i>Aphelia pumilio</i>	Dwarf Aphelia
SC	<i>Thysanotus patersonii</i>	Twining Fringe-lily

# EVC 882: Shallow Sands Woodland – Murray Mallee bioregion

**Recruitment:**

Continuous

**Organic Litter:**

20% cover

**Logs:**

20m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i>	Olive	high	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Centaurium tenuiflorum</i>	Slender Centaury	high	low
MH	<i>Hypochoeris radicata</i>	Cat's Ear	high	low
MH	<i>Hypochoeris glabra</i>	Smooth Cat's-ear	high	low
MH	<i>Trifolium campestre</i> var. <i>campestre</i>	Hop Clover	high	low
MH	<i>Trifolium angustifolium</i> var. <i>angustifolium</i>	Narrow-leaf Clover	high	low
MH	<i>Trifolium arvense</i> var. <i>arvense</i>	Hare's-foot Clover	high	low
MH	<i>Petrorhagia velutina</i>	Velvety Pink	high	low
MTG	<i>Briza minor</i>	Lesser Quaking-grass	high	low
MTG	<i>Briza maxima</i>	Large Quaking-grass	high	low
MTG	<i>Romulea rosea</i>	Onion Grass	high	high
MTG	<i>Vulpia bromoides</i>	Squirrel-tail Fescue	high	high
MNG	<i>Aira elegantissima</i>	Delicate Hair-grass	high	low
MNG	<i>Ehrharta calycina</i>	Perennial Veldt Grass	high	high
MNG	<i>Vulpia myuros</i> f. <i>myuros</i>	Rat's-tail Fescue	high	high
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	low
MNG	<i>Bromus rubens</i>	Red Brome	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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# EVC/Bioregion Benchmark for Vegetation Quality Assessment

## Murray Mallee bioregion

### EVC 981: Parilla Mallee

#### Description:

Open mallee to 10 m tall supported by shallow accumulations of aeolian material that have been deposited on the slopes of prominent Parilla Sandstone ridges. The understorey is highly variable comprising numerous floristic variants many of which appear to be strongly influenced by land use and fire regime. A well-developed woody shrub layer is typical in relatively undisturbed remnants.

#### Large trees:

Species	DBH(cm)	#/ha
<i>Eucalyptus</i> spp.	20 cm	25/ha
<i>Callitris</i> spp.	35 cm	

#### Tree Canopy Cover:

% cover	Character Species	Common Name
25%	<i>Eucalyptus oleosa</i> ssp. <i>oleosa</i>	Oil Mallee
	<i>Eucalyptus socialis</i>	Grey Mallee
	<i>Eucalyptus dumosa</i>	Dumosa Mallee
	<i>Callitris gracilis</i> ssp. <i>murrayensis</i>	Slender Cypress-pine

#### Understorey:

Life form	#Spp	%Cover	LF code
Immature Canopy Tree		5%	IT
Medium Shrub	4	10%	MS
Small Shrub	3	10%	SS
Large Herb	1	1%	LH
Medium Herb	3	5%	MH
Small or Prostrate Herb	5	5%	SH
Medium to Small Tufted Graminoid	6	15%	MTG
Medium to Tiny Non-tufted Graminoid	1	5%	MNG
Bryophytes/Lichens	na	10%	BL
Soil Crust	na	10%	S/C
<b>Total understorey projective foliage cover</b>		<b>60%</b>	

LF Code	Species typical of at least part of EVC range	Common Name
MS	<i>Pittosporum angustifolium</i>	Weeping Pittosporum
MS	<i>Melaleuca lanceolata</i> ssp. <i>lanceolata</i>	Moonah
MS	<i>Acacia pycnantha</i>	Golden Wattle
MS	<i>Acacia brachybotrya</i>	Grey Mulga
SS	<i>Olearia lanuginosa</i>	Wooly Daisy-bush
SS	<i>Westringia rigida</i>	Stiff Westringia
SS	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	Ruby Saltbush
SS	<i>Maireana brevifolia</i>	Short-leaf Bluebush
MH	<i>Helichrysum leucopsidium</i>	Satin Everlasting
SH	<i>Daucus glochidiatus</i>	Austral Carrot
SH	<i>Calandrinia calyptrata</i>	Pink Purslane
MTG	<i>Austrostipa</i> spp.	Spear-grass
MTG	<i>Dianella revoluta</i> s.l.	Black-anther Flax-lily
MTG	<i>Austrodanthonia setacea</i>	Bristly Wallaby-grass
MTG	<i>Austrodanthonia caespitosa</i>	Common Wallaby-grass
MNG	<i>Austrostipa elegantissima</i>	Feather Spear-grass
MNG	<i>Austrostipa platychaeta</i>	Flat-awned Spear-grass
MNG	<i>Austrostipa eremophila</i>	Desert Spear-grass
SC	<i>Clematis microphylla</i>	Small-leaved Clematis



# EVC 981: Parilla Mallee - Murray Mallee bioregion

**Recruitment:**

Continuous (excluding eucalypt overstorey)

**Organic Litter:**

20% cover

**Logs:**

15m/0.1 ha.

**Weediness:**

LF Code	Typical Weed Species	Common Name	Invasive	Impact
T	<i>Olea europaea</i>	Olive	high	high
MS	<i>Lycium ferocissimum</i>	Boxthorn	high	high
LH	<i>Brassica tournefortii</i>	Mediterranean Turnip	high	high
LH	<i>Centaureum tenuiflorum</i>	Slender Centaury	high	low
LH	<i>Gazania linearis</i>	Gazania	high	high
LH	<i>Sysimbrium</i> spp.	Mustard	high	high
LH	<i>Opuntia robusta</i>	Wheel Cactus	high	high
MH	<i>Mesembryanthemum nodiflora</i>	Ice-plant	high	high
MH	<i>Carrichtera annua</i>	Ward's Weed	high	high
MH	<i>Silene apetala</i> var. <i>apetala</i>	Sand Catchfly	high	low
SH	<i>Mesembryanthemum crystallinum</i>	Common Ice-plant	high	high
MNG	<i>Bromus</i> spp.	Brome	high	high
MNG	<i>Schismus barbatus</i>	Arabian Grass	high	low
MNG	<i>Vulpia myuros</i> f. <i>myuros</i>	Rat's-tail Fescue	high	high
MNG	<i>Juncus capitatus</i>	Capitate Rush	high	low
MNG	<i>Bromus rubens</i>	Red Brome	high	high
SC	<i>Asparagus asparagoides</i>	Bridal Creeper	high	high

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